SONY

3002616
SONY BDA

3-765-818-12 (1)

MUR201

DIGITAL REVERBERATOR

MU-R201

OPERATING INSTRUCTIONS

Before operating the unit, please read this manual thoroughly and retain it for future reference.

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For the Customers in the United States

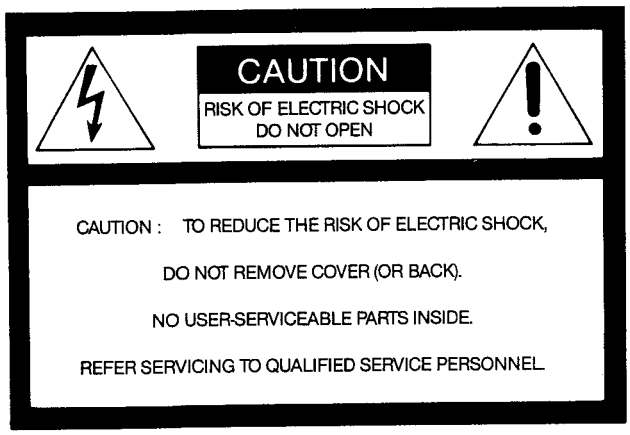
OWNER'S RECORD

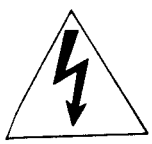
The model and serial numbers are located at the rear. Record these numbers in the space provided below. Refer to them whenever you call upon your Sony dealer regarding this product.

Model No. MU-R201 Serial No. _____

WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.


CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN
CAUTION : TO REDUCE THE RISK OF ELECTRIC SHOCK,
DO NOT REMOVE COVER (OR BACK).
NO USER-SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.



This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

INFORMATION

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient the receiving antenna
Relocate the equipment with respect to the receiver
Move the equipment away from the receiver
Plug the equipment into a different outlet so that equipment and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful: "How to Identify and Resolve Radio-TV Interference Problems". This booklet is available from the U.S. Government Printing Office, Washington DC, 20402, Stock No. 004-00345-4.

For the Customers in the United Kingdom

Important

The wires in the mains lead are coloured in accordance with the following code.

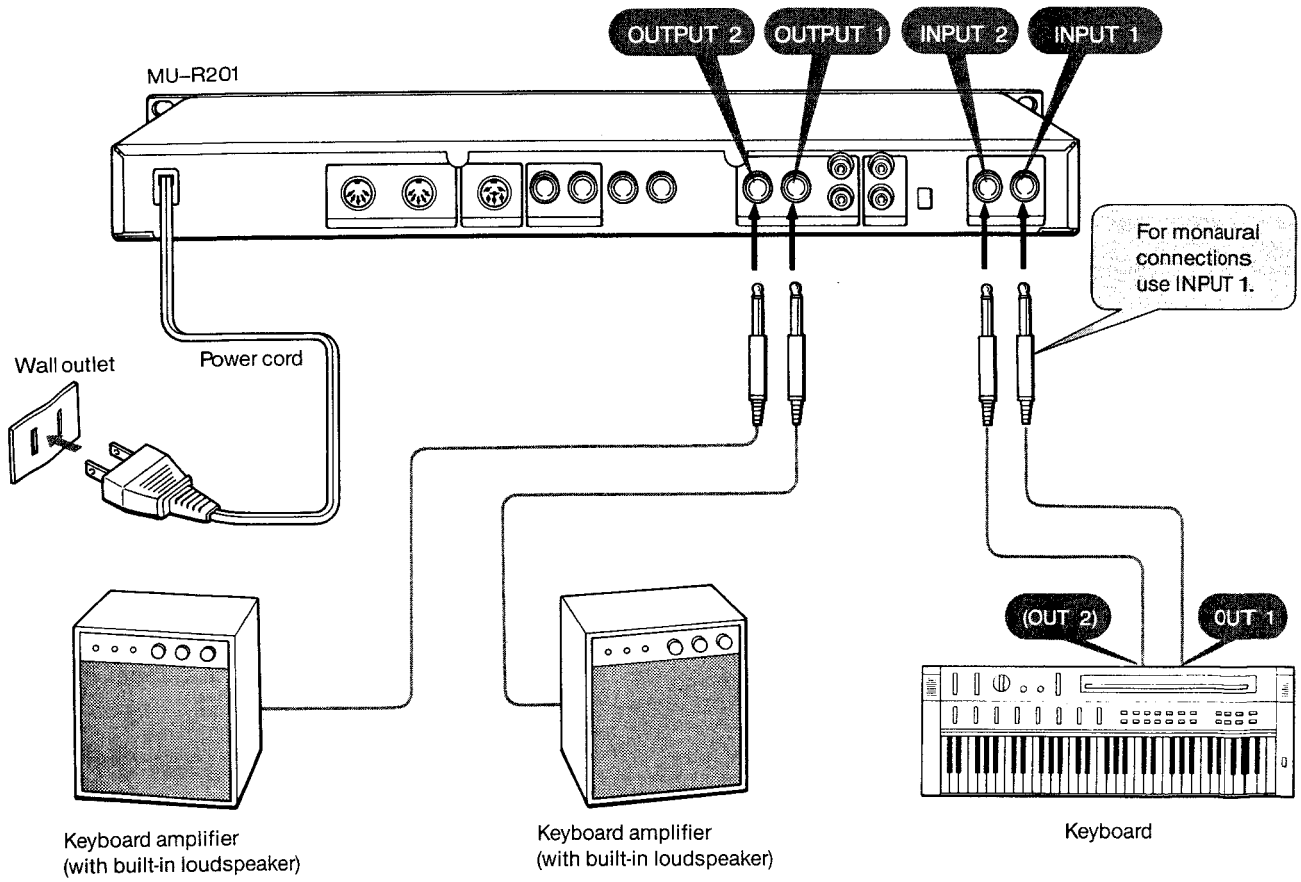
Blue: Neutral
Brown: Live

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:
The wire which is coloured blue must be connected to the terminal which is marked with the letter N or coloured black.
The wire which is coloured brown must be connected to the terminal which is marked with the letter L or coloured red.

CONNECTIONS

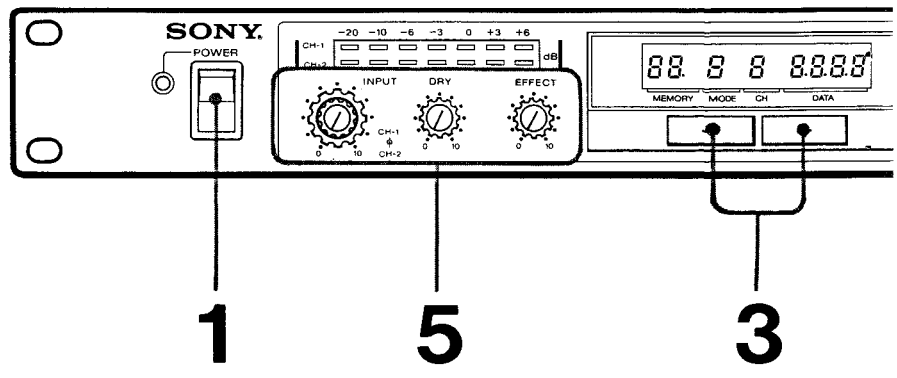
Notes on connections

- Set the power switches of the MU-R201 and all related equipment to OFF before making any connections.
- After connections are established, double-check for correctness and then plug the power cord of the MU-R201 into a wall outlet.

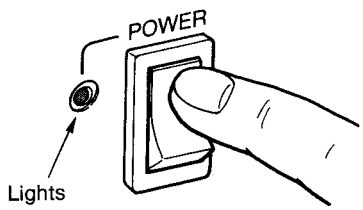


Other connection examples are shown on page 32.

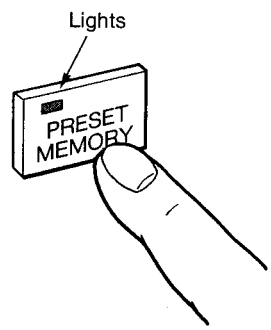
ACTIVATING A PRESET EFFECT



1 Turn on the unit.

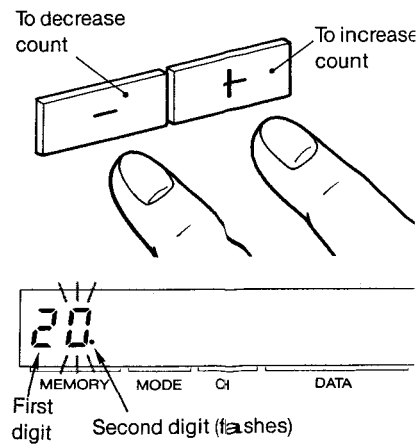


2 Press PRESET MEMORY.



Skip this step if the indicator is already lit.

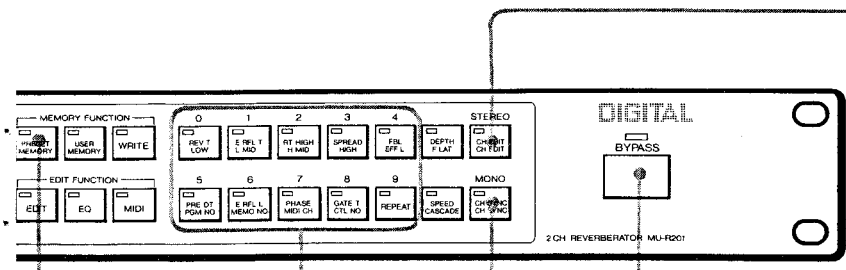
3 Select the first digit o the preset number.



Skip this step if the desired digit is already shown.

Before switching on connected equipment
To prevent switch-on thumps, turn down all level and volume controls.

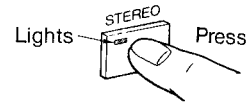
Preset number range
Preset numbers from "00." to "99." can be selected.
For preset contents, refer to the table on page 6.



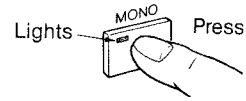
2

4

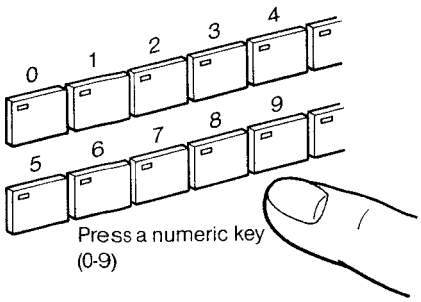
When the sound source is in stereo



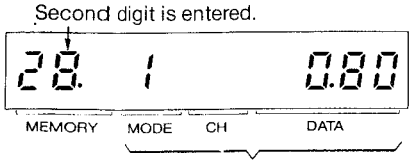
When the sound source is monaural



4 Select the second digit of the preset number.

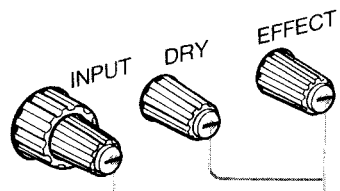


Second digit is entered.



Data of selected preset memory are displayed.

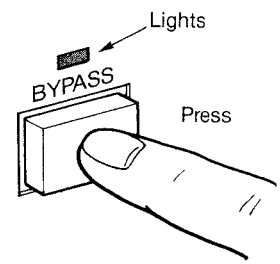
5 Adjust level controls.



Adjust the input signal level.

Adjust mixing ratio of source signal and effect signal.

To bypass the reverberator



Input signal is sent directly to output.
Press the button once more to release.

To select a different preset number

For a number with identical first digit, proceed with the step 4 to select the second digit. Otherwise repeat steps 3 and 4.

Switching between stereo and mono input

Stereo or mono input conditions are not stored in the memory and must be selected as required. When the unit is first switched on, the position selected during previous use is restored.

TABLE OF PRESET EFFECTS

The contents of memory numbers (chosen by steps 3 and 4 on the preceding page) are as follows.

- **Memory numbers 00. – 09.**
  The standard settings of the ten basic modes 0 – 9 (described on pages 14 through 17) are stored in these numbers. The numbers correspond to the respective modes, for easy recall when creating your own effects.
- **Memory numbers 10. – 64.**
  Effects mainly intended for studio recording or instrument performances.
- **Memory numbers 65. – 74.**
  Effects for public-address applications and live events.
- **Memory numbers 75. – 84.**
  Special effects for radio shows or live performances.
- **Memory numbers 85. – 99.**
  Effects for hall simulation and creating ambience during audio playback.

Application	Memory number	Program
Standard patterns	00.	Hall
	01.	Room
	02.	Plate
	03.	Gate Reverb
	04.	Reverse Reverb
	05.	Delay
	06.	Flash Panning
	07.	Dual Reverb
	08.	Reverb & Gate
	09.	Reverb & Delay
Recording, instrument use	10.	Large Hall
	11.	Medieval Hall
	12.	Concert Hall
	13.	Piano Hall
	14.	Chamber
	15.	Pipe Organ
	16.	Brass Solo
	17.	Reggae
	18.	Shadow
	19.	Pinball
	20.	Space Echo
	21.	Compact Room
	22.	Powerful Drum
	23.	Woodwinds
	24.	Live House (1)
	25.	Live House (2)
	26.	Vivid Snare
	27.	Piano Bar
	28.	Baroque
	29.	Trumpet
	30.	Beat Sound
	31.	Snare
	32.	Clear Reverb
	33.	Electric Guitar Distortion
Recording, instrument use	34.	Flute
	35.	Lyric Piano
	36.	Mystic Strings
	37.	Cathedral
	38.	Guitar Reverb
	39.	Polyrhythm
	40.	Rock Vocal
	41.	Vibrato
	42.	Sharp Snare
	43.	Tom Beat
	44.	Kick Gate
	45.	Fancy Kick
	46.	Slip Gate
	47.	Heavy Reverse
	48.	Reverse Slip
	49.	Scratch Reverse
	50.	Single Tapped Delay
	51.	Twin Delay
	52.	Tapped Delay
	53.	Flying Delay
	54.	Panning Delay
	55.	Shadow Rhythm
	56.	Rose Piano
	57.	Auto Panning
	58.	Tremolo
	59.	Twin Plate
	60.	Tom Tom
	61.	Ethnic Drum
	62.	Cliffverb
	63.	Solo Guitar & Metal Gate
	64.	Special Beat
PA (SR) use	65.	Standard Vocal
	66.	Rock Vocal
	67.	Ballad (1)
PA (SR) use	68.	Ballad (2)
	69.	Male Vocal (1)
	70.	Male Vocal (2)
	71.	Female Vocal (1)
	72.	Female Vocal (2)
	73.	Female Vocal Ballad
	74.	Solo Synthesizer
Special effects	75.	Tunnel
	76.	Stadium
	77.	Gymnasium
	78.	Indoor Pool
	79.	Radio Play
	80.	Mecha-Voice
	81.	Cave
	82.	Mountain Echo
	83.	Karaoke (1)
	84.	Karaoke (2)
Audio use	85.	American Large Hall (1)
	86.	American Large Hall (2)
	87.	European Large Hall (1)
	88.	European Large Hall (2)
	89.	European Recital Hall
	90.	Orchestra (1)
	91.	Orchestra (2)
	92.	Chamber Music (1)
	93.	Chamber Music (2)
	94.	Opera (1)
	95.	Opera (2)
	96.	Jazz (1)
	97.	Jazz (2)
	98.	Rock (1)
	99.	Rock (2)

For a detailed explanation of these effects, refer to page 36 – 45.

FEATURES

Impressive Stereo Ambience
All circuits from the input to the output stage are equipped for stereo processing. The key device of the MU-R201 is a newly developed 2-channel audio processing LSI (Digital Presence Synthesizer CXD1079), which creates stereo effects not possible with two monophonic reverberators. The result is striking, high-quality reverberation.

Versatile Preset Characteristics
Musicians, recording engineers and sound technicians from all over the world have contributed to select a total of 100 presets which are stored in the memory of the MU-R201. The user can immediately choose a setting for any application.

Creative Effect Shaping
The EDIT and EQ (equalizing) functions can be used to change preset reverberation effects and to produce original settings. Besides the 100 factory-preset characteristics, a user memory for another 100 settings is provided, offering unlimited creative potential.

Wide Variety of Reverberation Types
10 basic modes serve as a reference, complemented by many versatile effects, such as hall ambience, acoustically "live" room effects, tightly controlled plate reverberation, percussive multi-gate reverb and multi-reverse reverb. The dual multi delay setting offers up to 20 repeat outputs for each channel separately, and reverb & gate effects further enhance versatility.

Direct Memory Selection
Memory selection and adjustment is simple and straightforward, for easy operation also during a live performance.

Serves as Two Independent Reverberator Units
In modes 3 (Multi Gate Reverb), 4 (Multi Reverse Reverb), 5 (Dual Multi Delay), 7 (Dual Reverb), 8 (Reverb & Gate), and 9 (Reverb & Delay), the two channels of the MU-R201 operate separately. This permits use, for example, with two different instruments during recording or a live performance.

Precise Sound Definition
Up to 26 parameters can be set, to design exactly the sound field you want and to create special effects not available in ordinary surroundings.

4-band Equalizer Control
The MU-R201 incorporates a programmable two-channel four-band equalizer (LOW, L-MID, H-MID, HIGH). Equalizer data can be stored along with effect settings, to instantly provide the desired sound shaping characteristics for each application.

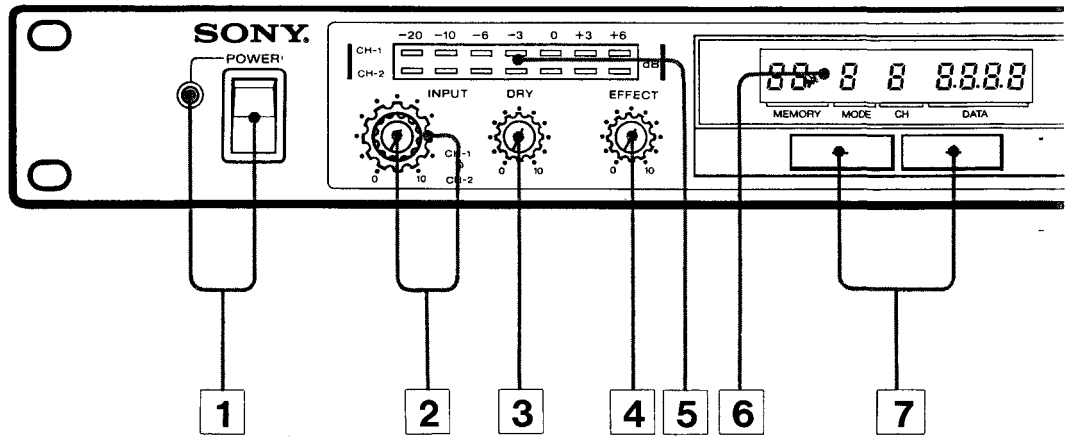
Remote Control Capability
An optional remote control unit (available soon) permits operation of the unit from any convenient location. A foot switch (FS-11) can be used to increase or decrease memory numbers, switch effect processing off and on, and suspend effects.

Flexible Input/Output Configuration
Two sets of input/output jacks are provided, to accommodate either standard phone plugs or RCA-type phono plugs. A +4/–20 dB LEVEL selector matches the unit to professional or consumer equipment and any musical instrument.

Easy Combination with Digital Instruments
The integrated MIDI interface accepts program change signals for external selection of memory numbers during a performance. The effect level can also be controlled via the key-touch and control change signals, making the MU-R201 ideally suited for use as an effecter for digital instruments.

LOCATION AND FUNCTION OF PARTS AND CONTROLS

FRONT PANEL



1 POWER switch and indicator
When the unit is switched on, the indicator lights up and the settings chosen during the last session are automatically recalled. A muting circuit is active for a few seconds after switch-on.

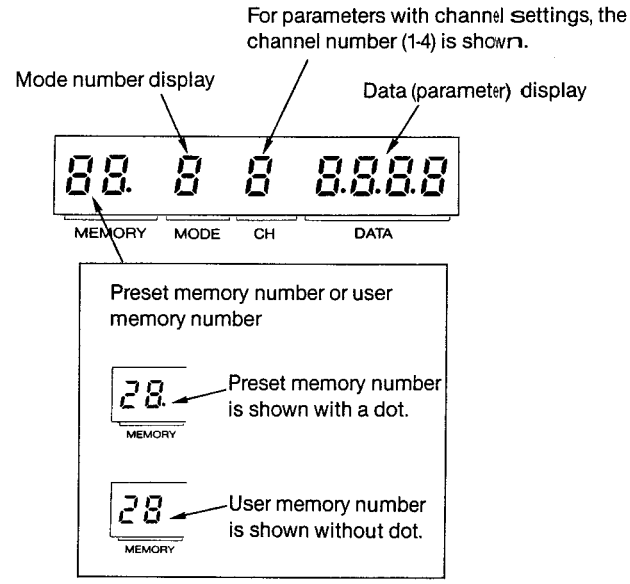
2 INPUT level control
This dual concentric control adjusts the input level for each channel separately. The outer control operates on channel 1 and the inner control on channel 2.

3 DRY level control
This control adjusts the amount of the unprocessed source signal in the output. In conjunction with the EFFECT control 4, this setting determines the reverberation ratio. When the effect signal only is desired, this control should be set to "0".

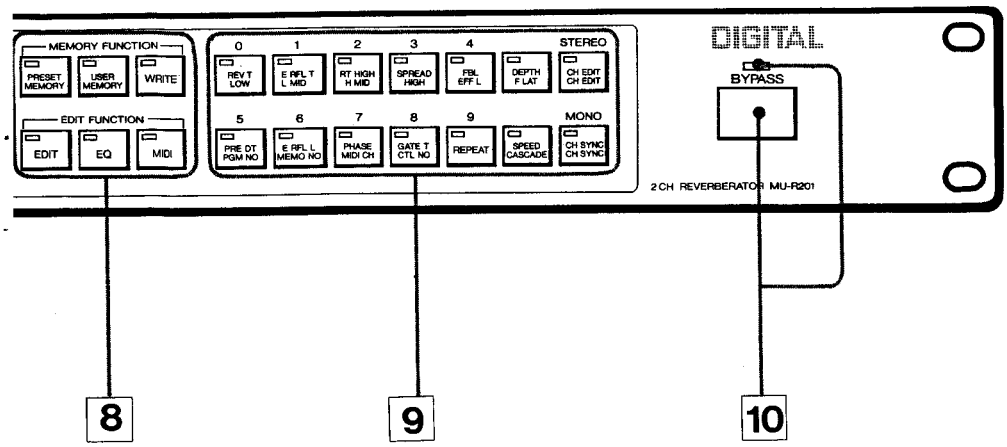
4 EFFECT level control
This control adjusts the amount of the processed effect signal in the output. In conjunction with the DRY control 3, this setting determines the reverberation ratio.

5 Input level meter
These indicators show the input level for each channel separately. Adjust the INPUT control 2 so that the 0 dB or +3 dB indicators light up on signal peaks.

6 Display
Information necessary for operation of the unit, such as memory number, mode number, channel number and parameter values is shown here.



7 +/– keys
These buttons are used to change parameter values or the first digit of memory numbers. + increases the number and – decreases it. When a button is kept depressed for more than 2 seconds, the indication changes continuously at a high speed.



8 Function buttons

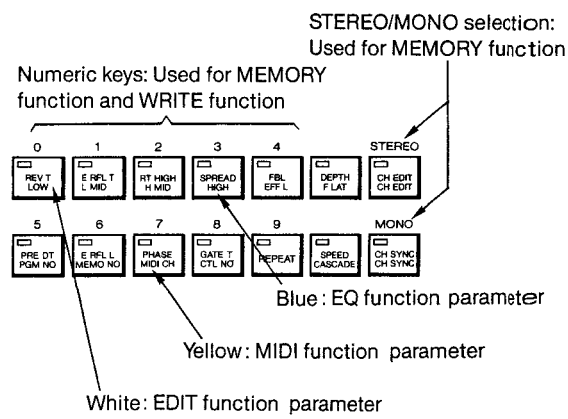
The following six functions can be activated with these buttons.

- **PRESET MEMORY function**
  Used to recall a preset memory from "00." to "99.".
- **USER MEMORY function**
  Used to recall a user memory from "00" to "99".
- **EDIT function**
  Used to change effect parameters.
- **EQ function**
  Used to adjust the two-channel four-band equalizer and to change the effect level parameter. This button is also used for the cascade connection in mode 8 and mode 9.
- **WRITE function**
  Used to store an edited effect in the user memory or transfer memory data to another number.
- **MIDI function**
  Used to program the unit for control through external MIDI equipment.

9 PARAMETER buttons

The action of these buttons depends on which function is selected. The indication above the buttons denotes their action for the MEMORY function and the WRITE function (numeric keys and STEREO/MONO switching).
The indication on the button face is color coded as follows.

White: EDIT function
Blue: EQ function
Yellow: MIDI function

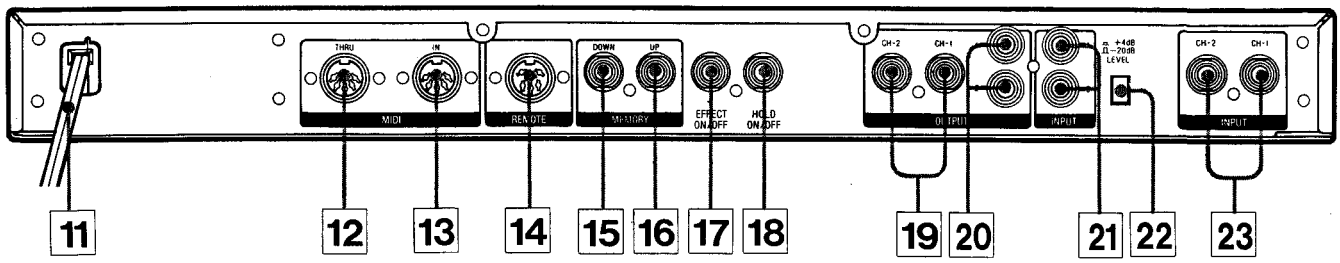


When the EDIT, EQ, or MIDI function is selected, the indicators of buttons which control adjustable parameters for this function are flashing.

10 BYPASS switch and indicator

Press this switch to bypass the signal processing circuits completely and send the signal directly to the outputs (indicator lights up).
While the power is turned off, the processing circuits are automatically bypassed (but indicator does not light).

REAR PANEL



11 Power cord

12 MIDI THRU (MIDI through out) connector (DIN 5P)
The signal from the MIDI IN connector 13 is directly supplied here. Use a standard MIDI cable to connect this jack to the MIDI IN jack of another MIDI component.

13 MIDI IN (MIDI input) connector (DIN 5P)
Serves for input of the MIDI signal. Use a standard MIDI cable to connect the jack to the MIDI OUT (or MIDI THRU) jack of another MIDI component.

14 REMOTE connector (DIN 6P)
Serves for connection of an optional remote control unit (available soon).

15 MEMORY UP jack (standard phone jack)
Serves for connection of an optional foot switch (FS-11). Each push of the foot switch increases the preset memory or user memory number by one count.

16 MEMORY DOWN jack (standard phone jack)
Serves for connection of an optional foot switch (FS-11). Each push of the foot switch decreases the preset memory or user memory number by one count.

17 EFFECT ON/OFF jack (standard phone jack)
Serves for connection of an optional foot switch (FS-11). Each push of the foot switch toggles the unit between effect processing off ("E. OFF" is displayed) and on.

18 HOLD ON/OFF jack (standard phone jack)
Serves for connection of an optional foot switch (FS-11). One push of the foot switch causes the present effect sound to be maintained ("hold" is displayed). Signals input after this point are not processed. Another push of the switch resumes normal effect processing. This function is active in modes 0, 1, 2, and 7.

19 OUTPUT jacks (standard phone jacks)
Carry the output signals of channel 1 and 2.

20 OUTPUT jacks (RCA-type phono jacks)
Carry the output signals of channel 1 and 2.

21 INPUT jacks (RCA-type phono jacks)
Accept the input signal for channel 1 and 2.

22 LEVEL selector
This is used to match the input and output of the MU-R201 to the level of connected equipment.
+4 dB (depressed): For use with professional-type equipment.
– 20 dB (released): For use with consumer-type audio components, electronic instruments, etc.

23 INPUT jacks (standard phone jacks)
Accept the input signal for channel 1 and 2.

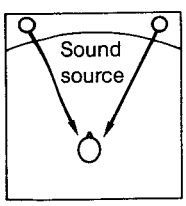
Note
If both sets of input jacks are connected, the standard phone jacks are given priority over the RCA-type phono jacks.

THE CONCEPT OF A REVERBERATOR

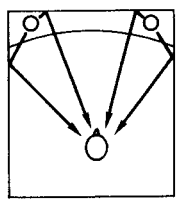
What Is Reverberation?
A sound which is produced within a limited space will be reflected from walls, objects, etc. With repeated reflections, the sound becomes less distinct, sound quality changes, and the level gradually decreases. This effect is especially marked for example in a concert hall. In acoustics, it is called reverb or reverberation.

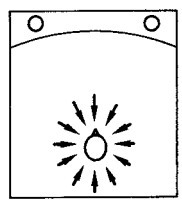
Three Elements of the Sound Field
The sound field which is experienced by the listener for example in a concert hall is made up of three basic components:
- the direct sound arrival from the sound source
- the so-called early reflections from walls and ceiling, etc.
- the repeatedly reflected later sound arrivals, i.e. the reverberation

These three elements are always present, but their quality and ratio depend on numerous factors, such as size of the hall, shape of walls and ceiling, sound absorption characteristics of building and decorating materials, etc. Famous concert halls are carefully designed to achieve a certain reverberation, which gives each hall its own, unique ambience and sound character.

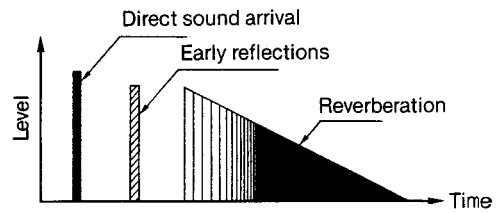


Direct sound arrival


Early reflections


Reverberation

Reverberation with the MU-R201
When trying to recreate the ambient sound field by means of digital signal processing, using two monaural reverberator units does not produce fully satisfactory results. The width and depth of the sound stage present in the stereo will not be preserved with such an arrangement. This becomes obvious by picturing for example a sound which originates from the right side of the stage. Its early reflections on the right will reach the listener earlier than the reflections on the left, and the reverberant sound field also gradually spreads from the right. To achieve natural-sounding reverb in such a case requires a reverberator which provides stereo inputs, stereo signal processing, and stereo outputs. In the MU-R201, this goal is achieved by the use of a two-channel digital audio signal processing LSI and latest stereo algorithms, producing natural and effective reverberation of very high quality. Different algorithms are required for delay effects, gate reverb effects, and auto-panning effects. All algorithms were newly developed for the MU-R201 and form the basis of the ten different effect modes (0–9). By using these modes in combination with suitable parameters, a multitude of impressive and striking effects can be created.



Three components of reverberation

REVERBERATION GLOSSARY

Parameter
Each effect is made up of a number of different aspects, such as the early reflection time, the early reflection level, the pre-delay time, the reverb time, etc. Such aspects which can be expressed as numeric values, are called parameters.

Memory
The MU-R201 incorporates a microprocessor which sends the various parameter values to the signal processing LSI. Such parameter data are stored in the memory circuits. The 100 preset memory settings are stored in ROM (Read-Only Memory) chips, and the 100 user memory settings in RAM (Random Access Memory) chips.

Edit
Changing the parameters of preset memory settings to create new, original effects, is called editing. This drastically widens the scope of applications for the unit.

Write
Storing edited parameters in the user memory for later recall is called writing. Such parameters can be used as desired, and they can also again be altered and stored repeatedly.

MIDI
This acronym stands for Musical Instrument Digital Interface. It denotes a world-wide standard for data transfer between instruments equipped for digital operation. MIDI applications include controlling other instruments from a keyboard, or automatic performances using a computer, sequencer, etc. The MIDI connector of the MU-R201 permits selecting the memory number with the MIDI program change signal (corresponding to tone changes of the keyboard), and controlling the effect level with the MIDI control change signal (produced for example with a modulation wheel).

Algorithm
To produce a certain effect, the digital reverberator performs a number of mathematical calculations which are based on a set of rules called algorithms. Different algorithms are required for reverb and delay, gate reverb, etc. In the MU-R201, latest stereo algorithms are used, resulting in very natural reverberation.

ON PARAMETERS

EDIT FUNCTION PARAMETERS

The parameters and parameter ranges used for the EDIT function vary, depending on the mode. For details, refer to "Operation Modes" on page 14.

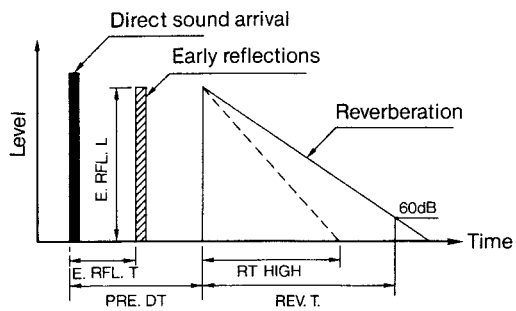
E. RFL. T. (Early Reflection Time)
The time required for the early reflections to reach the listener.

E. RFL. L. (Early Reflection Level)
The intensity of the early reflections.

REV. T. (Reverberation Time)
The time required for the reverberation to be attenuated by 60 dB. In modes 5, 6 and 9 (channel 2), this value corresponds to the delay time.

PRE. DT (Pre-Delay Time)
The interval between the direct sound arrival and the start of reverberation.

RT HIGH (Rotate High)
Due to the high-frequency sound-absorbing characteristics of walls, etc., the high frequency range of the reverberation decays faster than the low frequency range. This attenuation is expressed as a ratio of the reverb time. Higher values result in a live sound character.



Basic parameters for reverberation effect

SPREAD
This parameter defines the width of the sound stage. It controls the time required for each single reflection to reach the listener.

PHASE
Determines the phase relationship of the early reflections and the feedback signal. When E. RFL. L. and FBL are set to negative values, the phase is reversed.

FBL
Determines at which ratio the repeat output is fed back to the input for delay effect in modes 5, 6 and 9 (channel 2).

REPEAT
Determines the number of repeat output signals for the delay effect in mode 5 and mode 9 (channel 2). Depending on the REV. T. value, a maximum of 20 repeats can be selected.

GATE T. (Gate Time)
Determines the interval between start of reverberation and cut of reverberation by the gate circuit. Used for gate reverb of mode 3 and mode 8 (channel 2), and for reverse reverb in mode 4.

DEPTH
Determines the panning depth for auto-pan of mode 6.

SPEED
Determines the panning speed for auto-pan of mode 6.

EQ FUNCTION PARAMETERS

- LOW ..... 100 Hz, ±12 dB
- L MID (Low Mid) ..... 400 Hz ±12 dB
- H MID (High Mid) ..... 1.6 kHz ±12 dB
- HIGH ..... 6.4 kHz ±12 dB

The parameters of the two-channel, four-band equalizer can be adjusted at the respective center frequencies over a range of ±12 dB in 2-dB steps.

EFF. L (Effect Level)
Serves to preset the output level that is produced when the EFFECT control is at maximum.

CASCADE
Permits cascade (serial) connection of effects produced in channel 1 and channel 2. This function uses digital signal processing and is available in modes 8 and 9.

OPERATION MODES

MODE 0 (Hall)

This mode creates spacious reverberation as experienced in a large concert hall or an open-air stage setting.
A newly developed algorithm for stereo processing provides a wide-spread sound stage.
Besides total reverberation, this mode is also suited for instrument effects such as guitar and keyboard play or for use with vocals during recording.

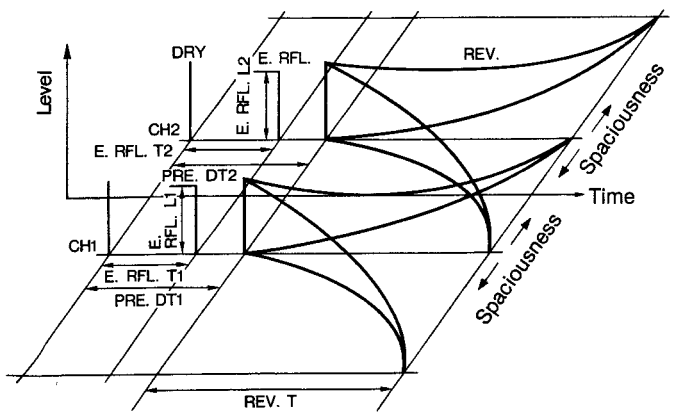
Basic parameters

REV. T.	0.3—99.0sec
PRE. DT	1—733msec (CH1, 2)
E. RFL. T.	1—733msec (CH1, 2)
E. RFL. L.	0.000—±0.992 (CH1, 2) ±designates the phase (set with PHASE)
RT HIGH	0.01—0.99
SPREAD	1—16

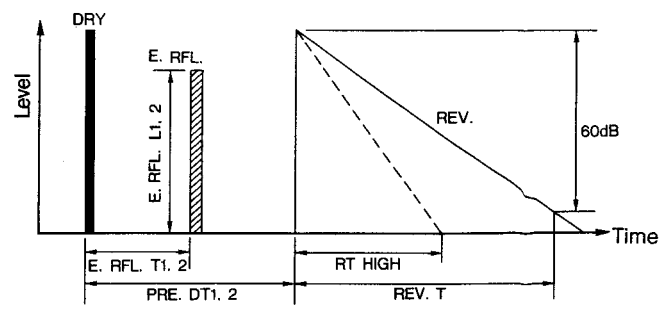
One-point advice
To simulate a large concert hall, set REV. T. to a somewhat lower value and achieve the designed effect with PRE. DT. E. RFL. L. should also be kept low. The following values may serve as a guideline.

REV. T.	1.5—3.8sec
PRE. DT	50—120msec
E. RFL. T.	30—80msec
E. RFL. L.	0.101—0.992
RT HIGH	0.40—0.50 (Do not make the setting too live.)
SPREAD	8—13 (Spacious impression is critical.)

PRE. DT., E. RFL. T., and E. RFL. L. can be set for each channel separately, but for a normal hall, identical values should be chosen. When using the effect for piano, selecting different E. RFL. T. and E. RFL. L. setting for channel 1 and channel 2 should give best results.



The numbers 1, 2 in the chart denote channel 1 and 2.

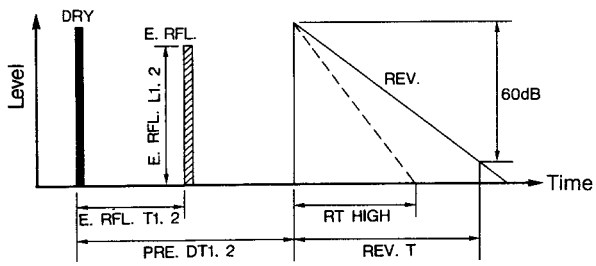


MODE 1 (Room)

This mode creates the reverberation of a comparatively small location such as an echo room or a smaller club. As with mode 0, the application range is wide and varied. Reverberation is tight and fairly sharp, resulting in a controlled and lively sound stage.

Basic parameters

REV. T.	0.07—24.75sec
PRE. DT	1—733msec (CH1, 2)
E. RFL. T.	1—733msec (CH1, 2)
E. RFL. L.	0.000—±0.992 (CH1, 2) ±designates the phase (set with PHASE)
RT HIGH	0.01—0.99
SPREAD	1—16



One-point advice

The setting procedure of mode 1 is basically the same as for mode 0. For simulating a setting such as small live-performance club, RT HIGH and SPREAD should be carefully controlled. The following values may serve as a guideline.

REV. T.	0.70—1.00sec
PRE. DT	20—80msec
E. RFL. T.	8—50msec
E. RFL. L.	0.500—0.992
RT HIGH	0.40—0.80 (Determines "liveness".)
SPREAD	3—6 (Keep spread to a somewhat lower value.)

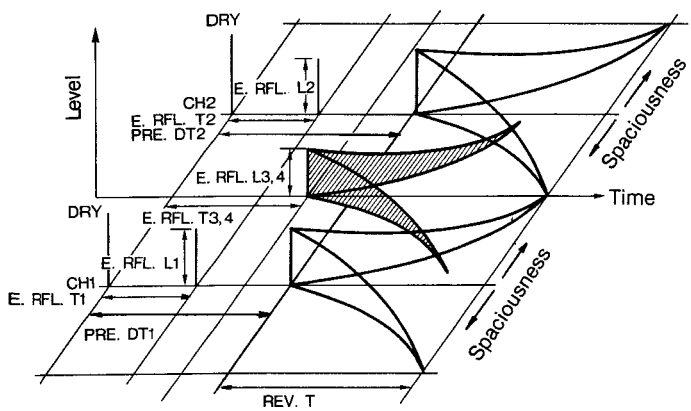
PRE. DT, E. RFL. T., and E. RFL. L. can be set for each channel separately, which may be used to emphasize the feeling of an intimate, live setting. The four-band equalizer can also be used to create a particular sound character.

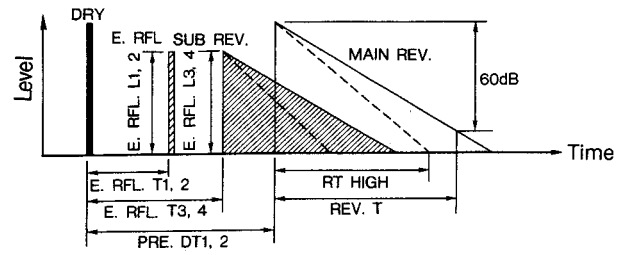
MODE 2 (Plate)

This mode produces plate reverberation. Which is the most commonly used type of reverb in recording studios. The smooth, tight impression created by this mode is especially suited for enhancing the brilliance of vocal and strings.

Basic parameters

REV. T.	0.3—99.0sec
PRE. DT	1—733msec (CH1, 2)
E. RFL. T.	1—733msec (CH1, 2, 3, 4)
E. RFL. L.	0.000—±0.992 (CH1, 2, 3, 4) ±designates the phase (set with PHASE)
RT HIGH	0.01—0.99
SPREAD	1—16





One-point advice

Besides the main reverberation, mode 2 also provides sub reverb (channel 3 and channel 4 of E. RFL. T. and E. RFL. L.). For the main reverberation, there is no crosstalk between the channels, but reverb density is high, with a spacious feeling. Sub reverb has less stereo spread and is more centered (shaded section in the illustration).

By placing the sub reverb behind the main reverb, the reverberation is first heard on a wider plane and then becomes focused towards the center. By reversing this setting, i.e. placing main reverb behind sub reverb, reverberation spreads out from the center. The following values may serve as a guideline.

REV. T.		0.8—3.0sec
PRE. DT		20—250msec
E. RFL. T.	CH1, 2	8—200msec
	CH 3,4	20—150msec
E. RFL. L.	CH1, 2	0.101—0.992
	CH3, 4	0.250—0.750
RT HIGH		0.50—0.80
SPREAD		8—14

Main reverb and sub reverb have different wave characteristics. By mixing the two effects, the desired characteristics can be achieved.

Note

The sub reverb of channel 1 is shown as channel 3, and the sub reverb of channel 2 as channel 4.

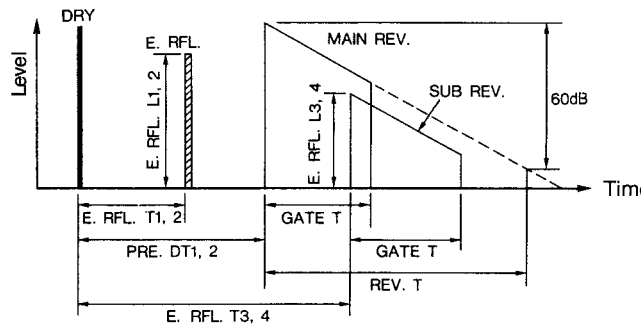
MODE 3 (Multi Gate Reverb)

This mode is used mainly for special drum and percussion effects, with the reverberation being cut off by a gate circuit after a certain interval.
PRE DT. 1 and 2, and E. RFL. 3 and 4 determine the gate timing, resulting in multi-gate reverb. SPREAD creates novel sound characteristics that cannot be achieved merely by equalizing. As there is no channel crosstalk, the MU-R201 can also be used in place of two gate reverb units.

Basic parameters

REV. T.	0.1—99.0sec
PRE. DT	1—850msec (CH1, 2)
E. RFL. T.	1—850msec (CH1, 2, 3, 4)
E. RFL. L.	0.000—±0.992 (CH1, 2, 3, 4) ±designates the phase (set with PHASE)
SPREAD	1—12 (CH1, 2)...Controls spaciousness 1—16 (CH3, 4)...Controls density
GATE T	1—300msec

One-point advice
When using gate reverb for percussive instruments, it is vital to carefully control PRE. DT and GATE T in accordance with the tempo of the instrument.
The impression of sudden cut-off can be softened by adding sub reverb before the main reverb is terminated by the gate.
When the REV. T is set to more than 50 sec, a special gate reveb effect is obtained.



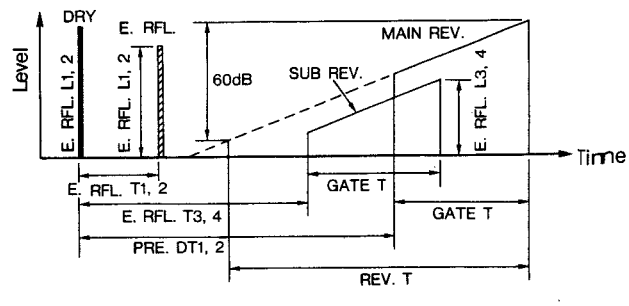
MODE 4 (Multi Reverse Reverb)

This special effect, which is possible only with digital signal processing, calls up the gate reverb in reverse. It is suited mainly for percussive instruments such as cymbals, etc. The functions are the same as in mode 3.

Basic parameters

REV. T.	0.1—99.0sec
PRE. DT	1—850msec (CH1, 2)
E. RFL. T.	1—850msec (CH1, 2, 3, 4)
E. RFL. L.	0.000—±0.992 (CH1, 2, 3, 4) ±designates the phase (set with PHASE)
SPREAD	1—12 (CH1, 2)...Controls spaciousness 1—16 (CH3, 4)...Controls density
GATE T	1—300msec

One-point advice
The reverse gate effect may be emphasized by setting PRE. DT to a fairly high value.
When sub reverb is inserted before main reverb, the impression of momentary signal loss can be reduced.
As with mode 3, setting REV. T to more than 50 sec. produces a special reverse reverb effect.



MODE 5 (Dual Multi Delay)

This mode provides a separate multi delay in both channels, so that the unit can be used like two independent delay machines. Up to 20 repeat outputs are possible.
By using feedback, the delay effect can be precisely controlled.

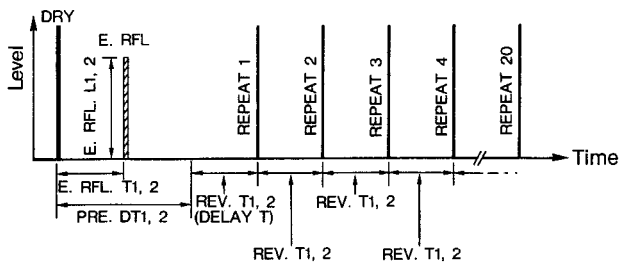
Basic parameters

REV. T. (Delay T)	1—1001msec (CH1, 2)
PRE. DT	0—255msec (CH1, 2)
E. RFL. T.	1—256msec (CH1, 2)
E. RFL. L.	0.000—±0.992 ±designates the phase (set with PHASE)
RT HIGH	0.01—0.99 (CH1, 2)
FBL	0.000—±0.992 (CH1, 2) ±designates the phase (set with PHASE)
REPEAT	0—20 (CH1, 2) Number of repeats changes with the REV. T. setting

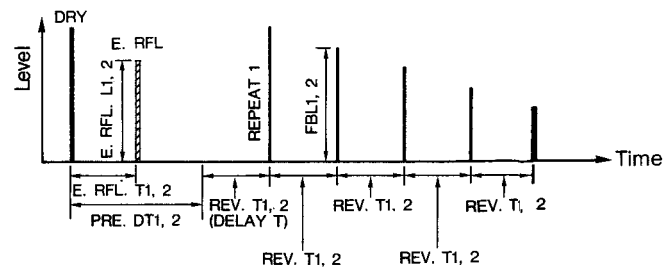
One-point advice
By selecting the following values and controlling FBL, the same effect as with a conventional delay machine can be achieved.

REPEAT	1
E. RFL. L.	0
PRE. DT	0

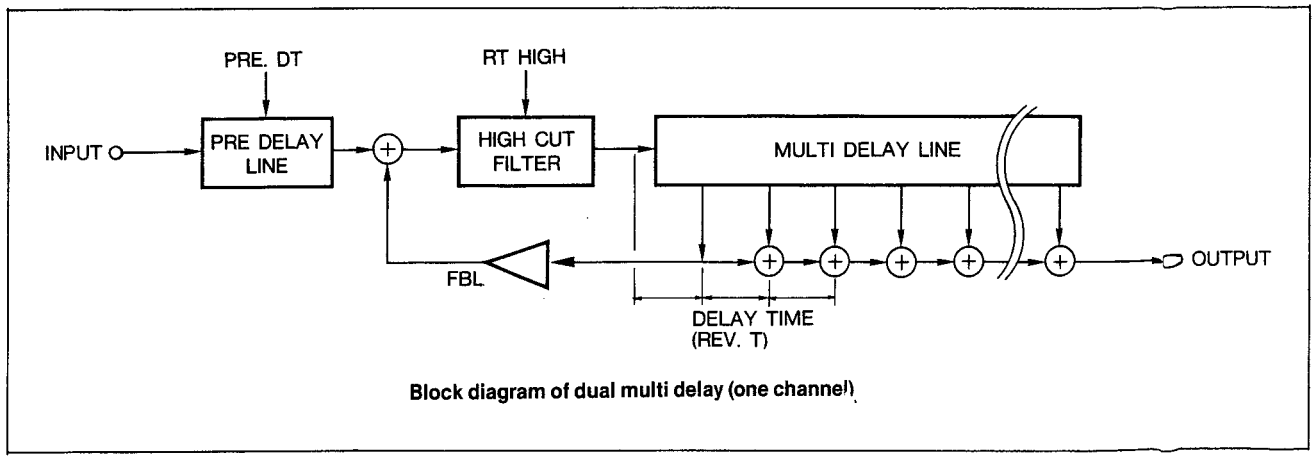
Special effects can be created for example by adjusting E. RFL. and REPEAT according to the tempo of the music, increasing the number of repeats and using feedback, or reversing the phase.



Delay effect (without feedback)



Delay effect (with one repeat and feedback)



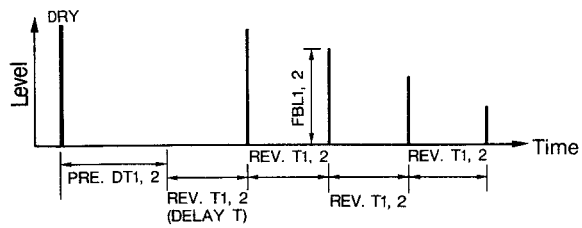
Block diagram of dual multi delay (one channel)

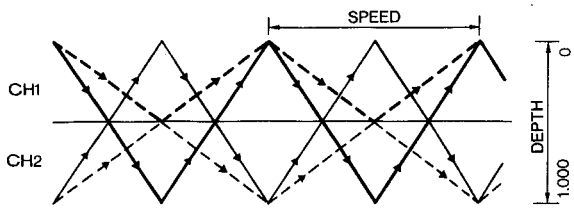
MODE 6 (Multi Auto-Pan)

In this mode, the delay signal is used for feedback, and the auto-panning function is carried out on the resulting signal.

Basic parameters

REV. T. (Delay T)	0—1001msec (CH1, 2)
PRE. DT	0—255msec (CH1, 2)
RT HIGH	0.01—0.99 (CH1, 2)
FBL	0.000—±0.992 (CH1, 2) ±designates the phase (set with PHASE)
DEPTH	0.000—1.000
SPEED	0.10—20.00Hz





Panning characteristics ⟹ DEPTH: 1.000

⟹ DEPTH: 0.500

One-point advice

By using different sources (for example strings in channel 1, harpsichord in channel 2) and slowly carring out auto-panning, an impressive effect can be achieved. The following values may serve as a guideline.

REV. T.	30—150msec
PRE. DT	20—50msec
RT HIGH	0.40—0.80
FBL	0.500—0.804
DEPTH	0.804—1.000
SPEED	0.50—0.80Hz

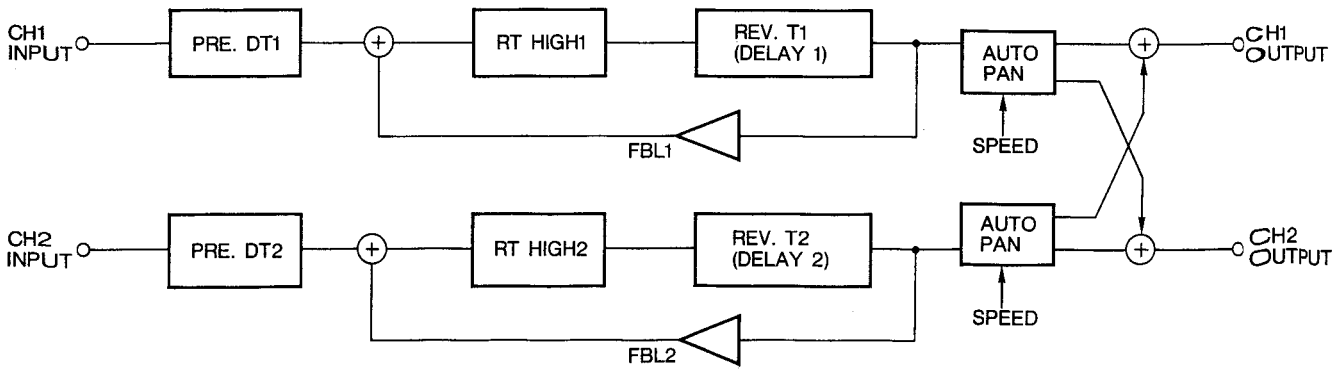
When the same signal is used in both channels, different REV. T. and PRE. DT settings should be chosen.

REV. T.	CH1	30—150msec
	CH2	80—200msec
PRE. DT	CH1	20—50msec
	CH2	30—80msec
FBL	CH1	0.500—0.804
	CH2	0.304—0.500

For organ, setting DEPTH to "1.000" and SPEED to about "8", and applying suitable REV. T. and FBL, a tremolo effect can be produced.

Notes

- If the same signal is present in both channels and the same settings are chosen, auto-panning will have no effect.
- In this mode, stereo operation is chosen automatically, regardless of the position of the STEREO/MONO indicator.



Block diagram of auto-panning function

MODE 7 (Dual Reverb)

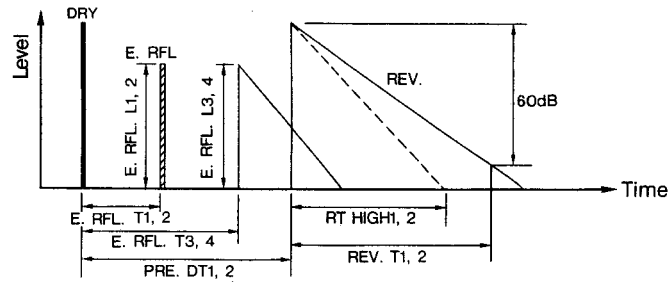
This mode provides separate reverb in both channels, so that the unit can be used like two independent reverberators. Reverberation is tight, with an effect similar to plate reverb. Separate sources can be fed to channel 1 and channel 2, permitting a wide range of applications.

Basic parameters

REV. T.	0.90—9.90sec (CH1, 2)
PRE. DT	1—572msec (CH1, 2)
E. RFL. T.	1—572msec (CH1, 2, 3, 4)
E. RFL. L.	0.000—±0.992 (CH1, 2, 3, 4) ±designates the phase (set with PHASE)
RT HIGH	0.01—0.99 (CH1, 2)
SPREAD	1—16 Setting to 16 produces same effect for channels 1 and 2

One-point advice

The setting for mode 7 is practically the same as for mode 2 (plate reverberation), except for the fact that there is no crosstalk between channels.
SPREAD cannot be set for the channels independently. In ordinary use, it should be set to "16" for identical results in both channels. By selecting a value of "15" or lower, a slight stereo effect can be produced.



MODE 8 (Reverb & Gate)

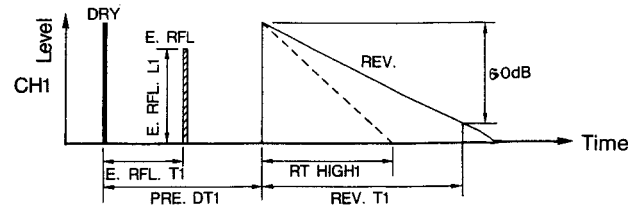
In this mode, channel 1 operates with the reverb effect of mode 7, and channel 2 with the gate reverb effect of mode 3. Sub reverb is not available.
It can be used, for example, for vocals in channel 1 and drums and percussion in channel 2.

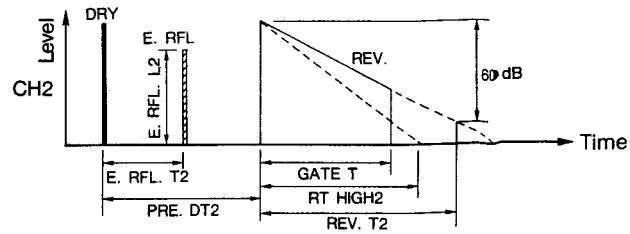
Basic parameters

REV. T.	0.90—9.90sec (CH1)
	0.1—99.0sec (CH2)
PRE. DT	1—572msec (CH1)
	1—850msec (CH2)
E. RFL. T.	1—572msec (CH1)
	1—850msec (CH2)
E. RFL. L.	0.000—±0.992 (CH1, 2) ±designates the phase (set with PHASE)
RT HIGH	0.01—0.99 (CH1, 2)
SPREAD	1—16 (CH1)
	1—12 (CH2)
GATE	1—300msec (CH2)

One-point advice

By using cascade connection (channel 1→channel 2 or vice versa), special effects can be created.





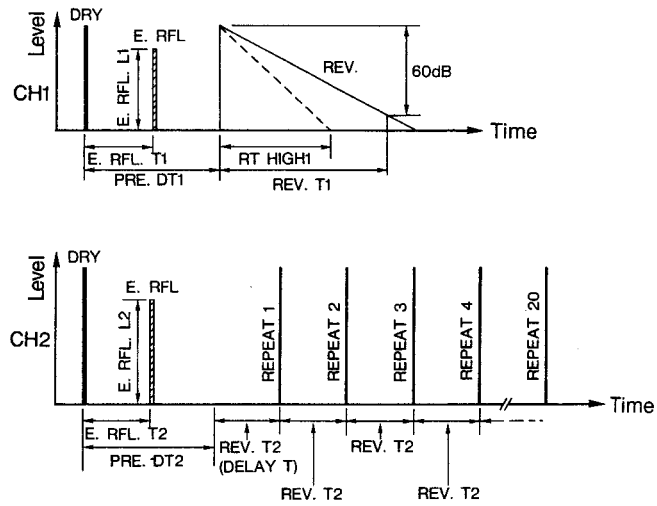
MODE 9 (Reverb & Delay)

In this mode, channel 1 operates with the reverb effect of mode 7, and channel 2 with the delay effect of mode 5. Sub reverb is not available.
This may be used, for example, to process vocals in channel 1 and keyboards in channel 2.

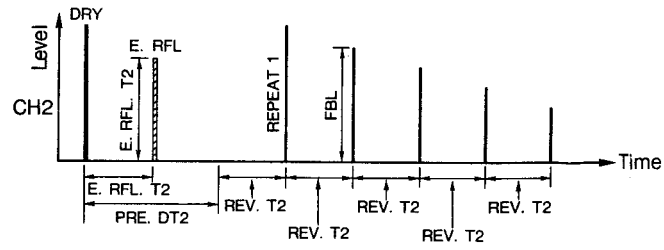
Basic parameters

REV. T. (Delay T)	0.90—9.90sec (CH1)
	1—1001msec (CH2)
PRE. DT	1—572msec (CH1)
	0—255msec (CH2)
E. RFL. T.	1—572msec (CH1)
	1—256msec (CH2)
E. RFL. L.	0.000—±0.992 ±designates the phase (set with PHASE)
RT HIGH	0.01—0.99 (CH1, 2)
SPREAD	1—16 (CH1)
FBL	0.000—±0.992 (CH2) ±designates the phase (set with PHASE)
REPEAT	0—20 (CH2) Number of repeats changes with the REV. T setting

One-point advice
By using cascade connection (channel 1→channel 2 or vice versa), special effects can be created.



Delay effect (without feedback)



Delay effect (with one repeat and feedback)

PARAMETER QUICK REFERENCE CHART This chart lists all parameters described on the preceding pages.

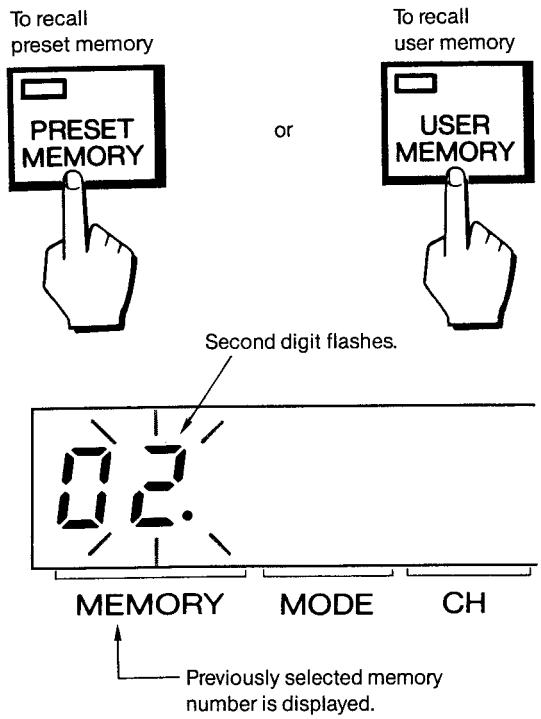
Mode / Parameter	0	1	2	3	4	5	6	7	8	9	Range
REV. T.	0		0								0.3—99.0sec
		0									0.07—24.75sec
				0	0				2		0.1—99.0sec
								1, 2	1	1	0.90—9.90sec
						1, 2				2	1—1001msec
							1, 2				0—1001msec
PRE. DT	1, 2	1, 2	1, 2								1—733msec
				1, 2	1, 2				2		1—850msec
						1, 2	1, 2			2	0—255msec
								1, 2	1	1	1—572msec
E. RFL. T.	1, 2	1, 2	1,2,3,4								1—733msec
				1,2,3,4	1,2,3,4				2		1—850msec
						1, 2				2	0—255msec
								1,2,3,4	1	1	1—572msec
E. RFL. L.	1, 2	1, 2	1,2,3,4	1,2,3,4	1,2,3,4	1, 2		1,2,3,4	1, 2	1, 2	±.000—±.992
RT HIGH	0	0	0			1, 2	1, 2	1, 2	1	1, 2	0.01—0.99
SPREAD	0	0	0	3, 4	3, 4			0	1	1	1—16
				1, 2	1, 2				2		1—12
GATE T				0	0				2		1—300
FBL						1, 2	1, 2				±.000—±.992
REPEAT						1, 2					0—20
DEPTH							0				.000—1.000
SPEED							0				0.10—20.00Hz
EQ LOW	1, 2	1, 2	1, 2	1, 2	1, 2	1, 2	1, 2	1, 2	1, 2	1, 2	– 12—12 dB
L. MID	1, 2	1, 2	1, 2	1, 2	1, 2	1, 2	1, 2	1, 2	1, 2	1, 2	– 12—12 dB
H. MID	1, 2	1, 2	1, 2	1, 2	1, 2	1, 2	1, 2	1, 2	1, 2	1, 2	– 12—12 dB
HIGH	1, 2	1, 2	1, 2	1, 2	1, 2	1, 2	1, 2	1, 2	1, 2	1, 2	– 12—12 dB
EFF L	1, 2	1, 2	1, 2	1, 2	1, 2	1, 2	1, 2	1, 2	1, 2	1, 2	.000—1.000
CASCADE									0	0	OFF, 1—2, 2—1

0 common for both channels
1 channel 1 only
2 channel 2 only
1, 2 separate for channels 1 and 2
3, 4 separate for channels 3 and 4
1, 2, 3, 4 separate for channels 1, 2, 3, 4

RECALLING MEMORY SETTINGS (MEMORY FUNCTION)

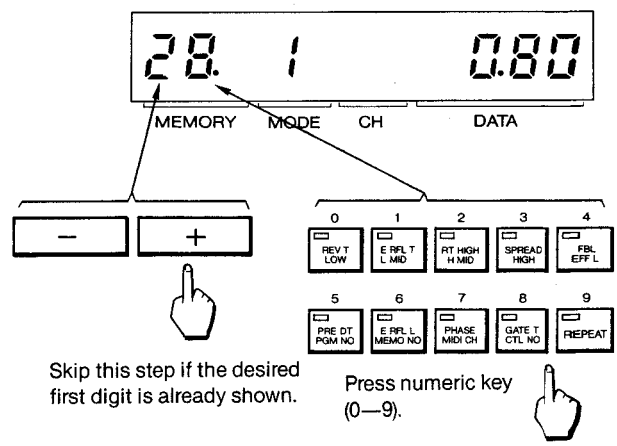
Proceed as follows to recall stored effects. The parameter buttons operates as numeric keys.

1 Press PRESET MEMORY or USER MEMORY.



2 Adjust first digit of memory number with + and –.

3 Enter second digit of memory number with numeric keys.



When the second digit has been entered
The memory number, mode number, and REV. T setting (SPEED for mode 6) are shown on the display. (The REV. T or SPEED indicator lights.) The effect memorized with the number displayed will be activated.

To select another memory number
- To change the entire memory number (PRESET or USER), repeat from step 1.
- To change the first digit only, repeat from step 2.
- To change the second digit only, repeat from step 3.

User memory
The unit is shipped with the PRESET memory values are also stored in the USER memory at the factory.

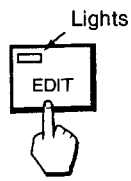
EDITING EFFECTS (EDIT FUNCTION)

Proceed as follows to edit stored effects and to create your own settings.
The function of the parameter buttons is as shown by the white lettering.

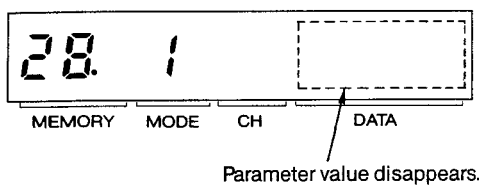
1 Select the memory number to be editted.

Proceed with steps described in page 23.

2 Press EDIT.

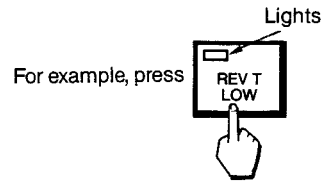


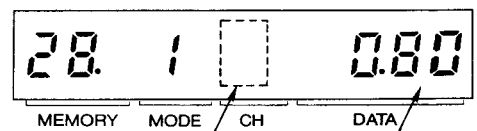
The indicators of parameter buttons whose contents can be changed are flashing.



Parameter value disappears.

3 Press the buttons of the parameter to be changed.





For parameters with channel settings, the selected channel number is shown here.

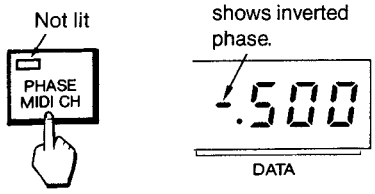
Current value of selected parameter is shown.

Changing other parameters

Repeat steps 3 and 4. If an invalid parameter key is pressed, the indicator does not light and the display remains unchanged.

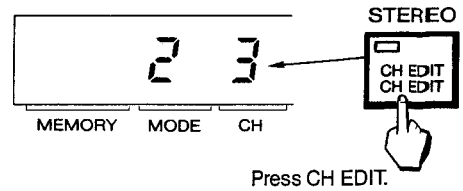
To invert the phase

Press PHASE while the E. RFL or FBL parameter is selected.



Pressing the button once more restores normal phase (negative indication disappears).

Selecting the parameter channel



Press CH EDIT.

Each push of the CH EDIT button changes the setting as follows.

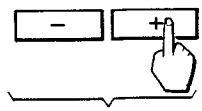
- CH 1, CH 2 active:

→ CH 1 → CH 2 →

- CH 1, CH 2, CH 3, CH 4 active:

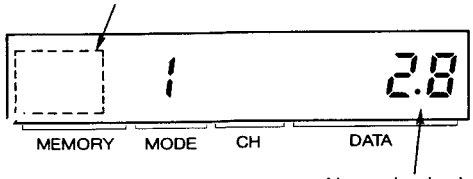
→ CH 1 → CH 2 → CH 3 → CH 4 →

4 Set value with + and –.



Change parameter value.

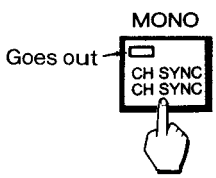
Memory number disappears.



New value is shown.

As the sound changes immediately with the value, the parameter settings can be verified by ear.

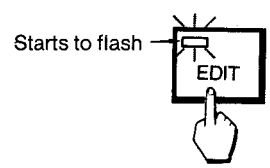
Selecting separate values for each channel



If the indicator of the CH SYNC button is lit, press the button.

Indicator of CH SYNC button lit: Parameter values for channels 1 and 2, and 3 and 4 are set together.
Indicator of CH SYNC button out: Parameter values for each channel are set independently.
Note that pressing the CH SYNC button while the button is out causes the value of the other channel to become the value of the currently selected channel.

To compare effects to initial setting



Prress EDIT button once more.

- All parameters are reset to their initial values.
- In this condition, all controls except the EDIT button are inactive. If the displayed parameter has a channel setting, the CH EDIT button can be used to check the value for each channel.
- Pressing the EDIT button once more returns the unit to the changed parameters.

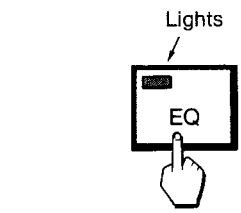
Note
If the memory number is changed with the MEMORY function during editing, the currently edited data are lost.

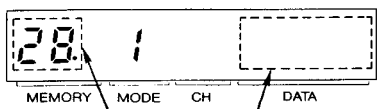
CHANGING EFFECTS (EQ FUNCTION)

Proceed as follows to change the sound with the two-channel, four-band equalizer or to adjust the effect level.
The function of the parameter buttons is as shown by the blue lettering.

Changing equalizer settings.

1 Press EQ.



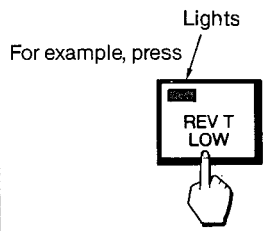


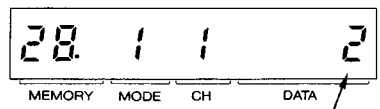
When EQ is pressed during editing, the memory number display disappears.

Parameter value disappears.

The parameter indicators are flashing.

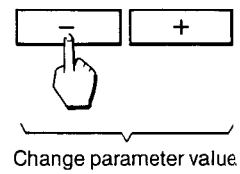
2 Press the button of the parameter to be changed.

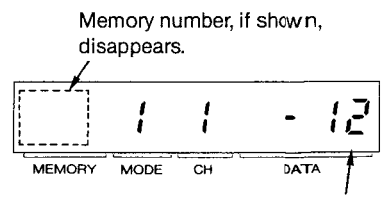




Value of selected parameter is shown.

3 Set value with + and −.

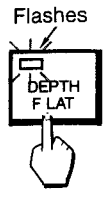




As the sound changes immediately with the value, the settings can be verified by ear.

Changing other parameters
Repeat steps 2 and 3. If an invalid parameter button is pressed, the indicator does not light and the display remains unchanged.

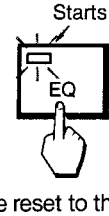
To listen to the flat setting
Press FLAT while the equalizer parameter (LOW, L MID, H MID, or HIGH) is selected.



Pressing FLAT once more returns the unit to the equalized setting.

To listen to the unchanged effect

Press EQ once more.



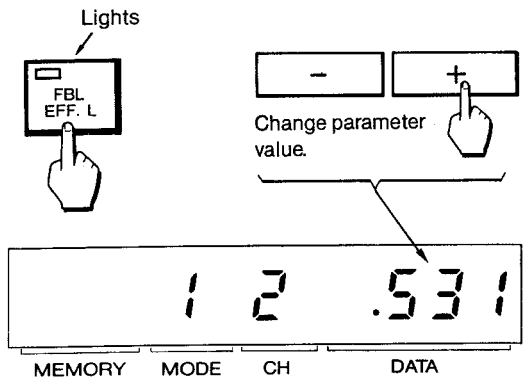
- All parameters are reset to their initial values.
- In this condition, all control except the EQ button are inactive. If the displayed parameter has a channel setting, the CH EDIT button can be used to check the value for each channel.
- Pressing the EQ button once more returns the unit to the changed parameters.

Using the CH EDIT and CH SYNC buttons
These buttons operate in the same way as for the EDIT function (refer to page 24 and 25).

Note
If the memory number is changed with the MEMORY function during editing, the currently changed data are lost.

Setting the effect level

Press EFF. L.

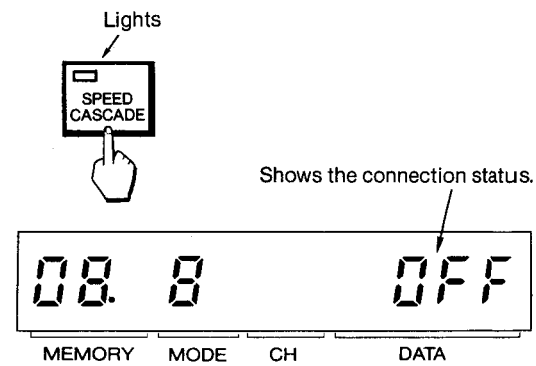


"1.000" denotes the maximum output level, and "000" the minimum output level (no effect).
By setting the output level to a suitable value for each effect, readjustment of mixing level when changing effects during a performance is not necessary.

Cascade connection

This feature is available in modes 8 and 9.

Press CASCADE.

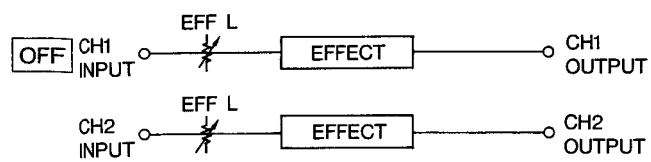


Select the desired connection type with + and – .

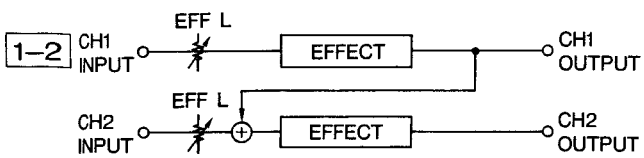
+ key ····· → OFF → 1-2 → 2-1 →

– key ····· ← OFF ← 1-2 ← 2-1 ←

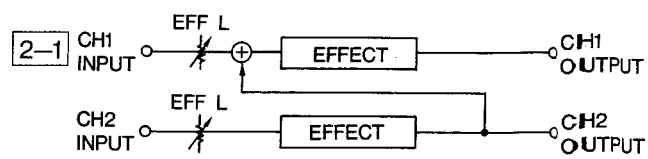
Cascade connection block diagram



Effects of channel 1 and channel 2 are supplied to the output.



The reverberation effect of channel 1 is supplied to that channel's output and also mixed to the input of channel 2. After gate or delay processing, it appears at the output of channel 2.

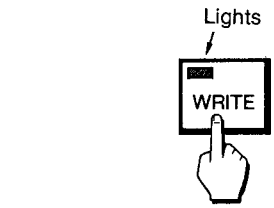


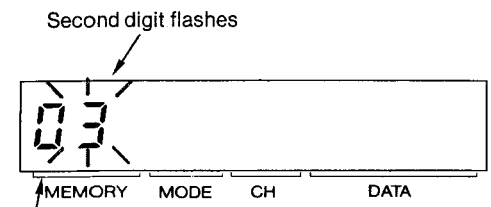
The gate or delay processed signal of channel 2 is supplied to that channel's output and also mixed to the input of channel 1. After reverberation processing, it appears at the output of channel 1.

STORING DATA (WRITE FUNCTION)

Proceed as follows to store edited or equalized parameters in the user memory.

1 Press WRITE.

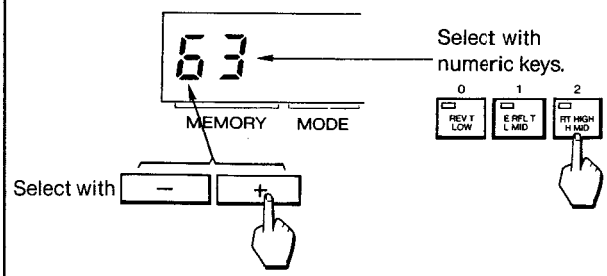




Number following the previously selected user memory is displayed.

2 Select memory number with + and - and numeric keys.

For example, to write to memory number "63"



Indicator of WRITE button starts to flash.

One-point advice

The WRITE function can be used to line up memory contents in the order required for use, for example, during a performance. When wishing to use "05", "18", "01", "32", "15" in that order, for example, you may use the numbers above 50 and proceed as follows.

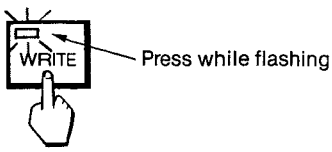
1 Call up "05" and store in "50".
2 Call up "18" and store in "51".
3 Call up "01" and store in "52".
4 Call up "32" and store in "53".
5 Call up "15" and store in "54".

By starting with the memory number "50" and using the foot switch (connected to the MEMORY UP jack), you can easily call up the stored settings.

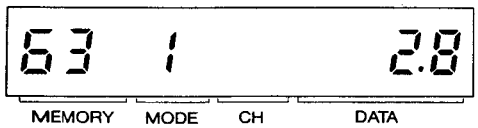
When the second digit of the memory number is selected

The indicator of the WRITE button flashes. In this condition, the memory number is not yet stored and may be changed.

3 Press WRITE once more.



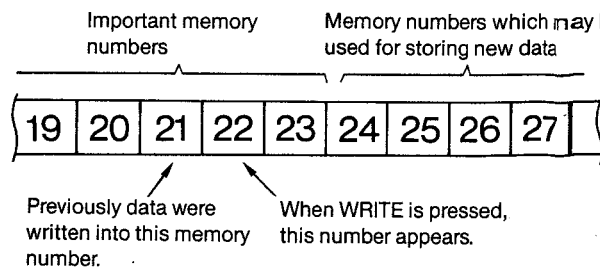
Newly stored user memory content is shown.



When data are stored
The USER MEMORY function is activated with the new memory number.

Writable memory
You can modify the effect recalled from the PRESET MEMORY or USER MEMORY, and memorize it to the USER MEMORY. Note that you cannot write the effect into the PRESET MEMORY.

Note
When the WRITE button is pressed, the number that appears is always the one following the previous number used for storing data. Before using the new number, always make sure that it does not contain any data which you may want to keep, as these data will be erased (written over).



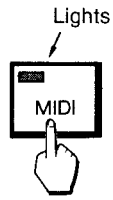
The contents stored in a user memory number should be noted in the User Memory Chart on page 46 for easy recall.

USING MIDI CONTROL (MIDI FUNCTION)

When MIDI program change signals and control change signals are used to control the MU-R201, the program contents can be changed as follows. The function of the parameter buttons is as shown by the yellow lettering.

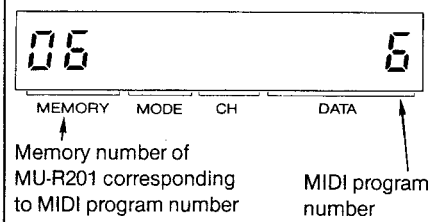
Checking and altering the memory number for a program.

1 Press MIDI.



The indicators of parameter buttons are flashing.

2 Press PGM NO (to check the corresponding memory number).

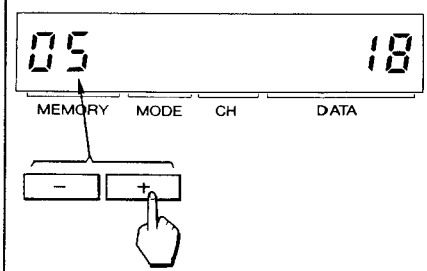


Memory number of MU-R201 corresponding to MIDI program number

MIDI program number

When the program number is changed with the + and −, the corresponding memory numbers are shown.
When the MIDI program change signal is received, the received program number is displayed, which permits a check of corresponding numbers.

3 Press the MEMO NO button (to change the corresponding memory number).



The corresponding memory number can be changed with + and −.

Present memory User memory

+ key ····· 00.→01.··· 99.→00→01···99

− key ····· 00.←01.···99.← 00←01···99

Factory-set memory numbers

MIDI program number	Memory number of MU-R201
00—99	User memory 00—99
100—127	Preset memory 00.—27.

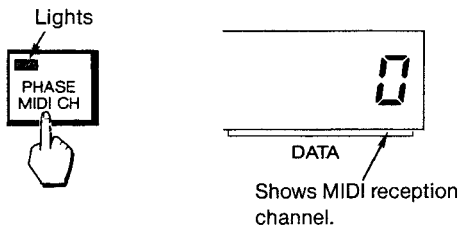
Repeating the memory number change

By repeating steps 2 and 3, the memory numbers corresponding to other program numbers can be changed. After all desired changes were made, set the unit to the MEMORY function.

Selecting the MIDI reception channel

To be able to control the MU-R201 via the MIDI interface, the MIDI reception channel setting of the MU-R201 must match the MIDI transmission channel of the MIDI equipment.

Press the MIDI CH button.

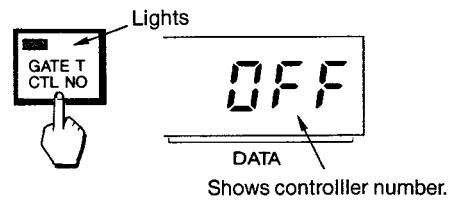


MIDI reception channels from "0" to "16" can be selected.
- 0: OMNI ON (all channels from 1 to 16 are received).
- 1-16: OMNI OFF (only the selected channel is received)

Select the channel with the + and – keys.

Controlling the effect level

Press CTL NO.



Use + and – to set the controller number (OFF, 1—124). (The unit is factory preset to "OFF".)

Controller number	Controller
OFF	Control disabled
1	Modulation wheel
2	Breath controller
4	Foot controller
5	Portament time
6	Data entry
7	Main volume
8	Balance control
10	Pan-pot
11	Expression
64	Damper pedal
65	Portament
66	Sostenuto
67	Soft pedal
96	Data increment
97	Data increment
122	Key velocity
123	Channel key pressure
124	Note number (for Note On only)

Numbers 122, 123, and 124 do not use the control change signal. For these numbers, the key velocity, channel key pressure, and note number signals are used to control the effect level.

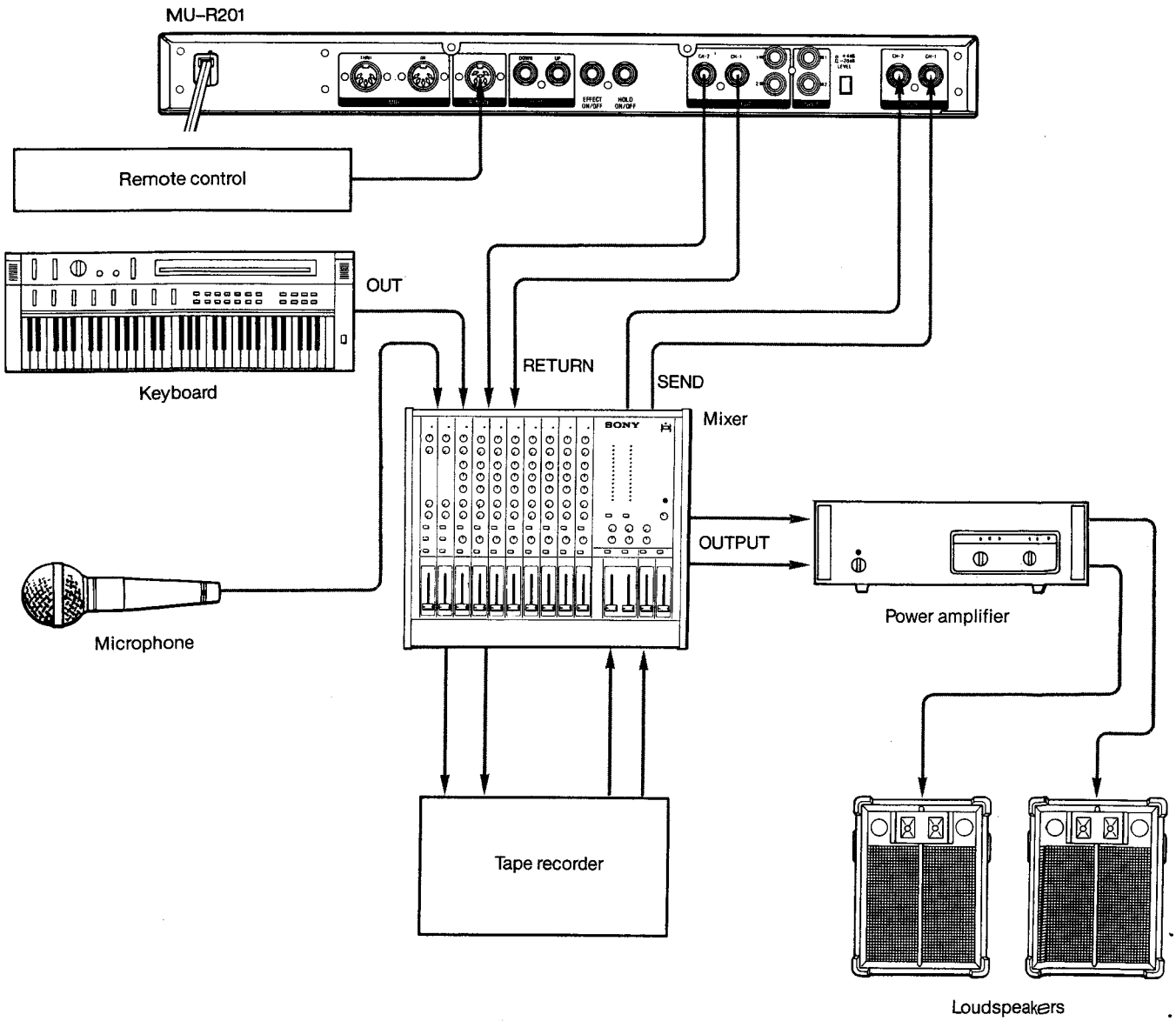
Note

Memory changes with the program change signal are possible only during use of the MEMORY function.
Effect level control with the control change signal is possible during use of all functions.
Some MIDI equipment may not be able to supply all signals. Refer to the instruction manual of the respective equipment for details.

CONNECTION EXAMPLES

CONNECTIONS FOR RECORDING

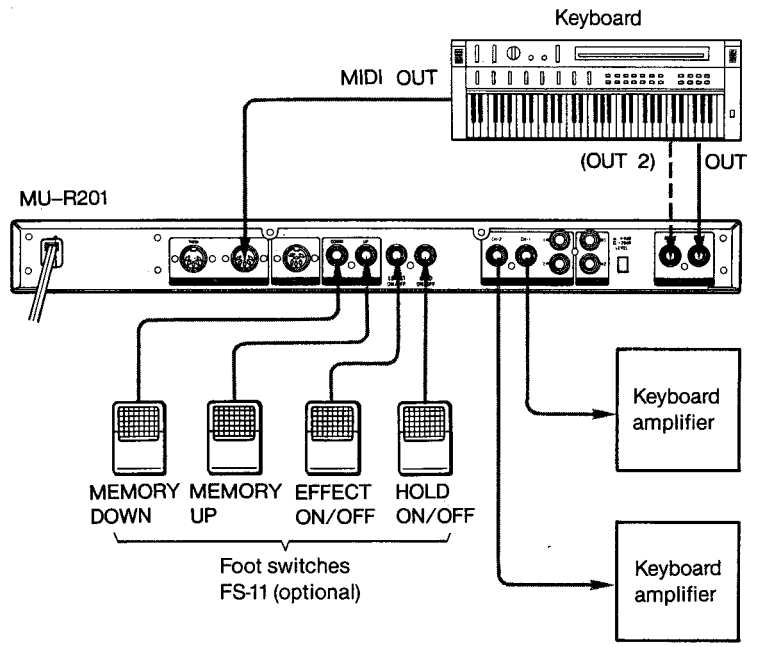
- The LEVEL switch should normally be set to +4 dB.
- The STEREO/MONO selector should normally be set to STEREO.



USE AS AN INSTRUMENT EFFECTER

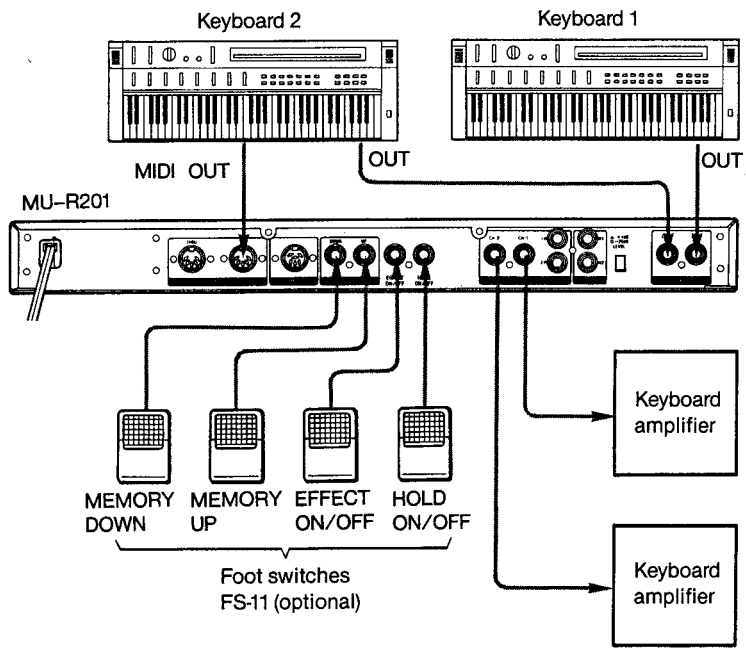
Mono/stereo input, stereo output example

- The LEVEL switch should normally be set to – 20 dB.
- The STEREO/MONO selector should be set to MONO for mono input, or to STEREO for stereo input.



Independent use of two channels

- The LEVEL switch should normally be set to – 20 dB.
- The STEREO/MONO selector should be set to STEREO.

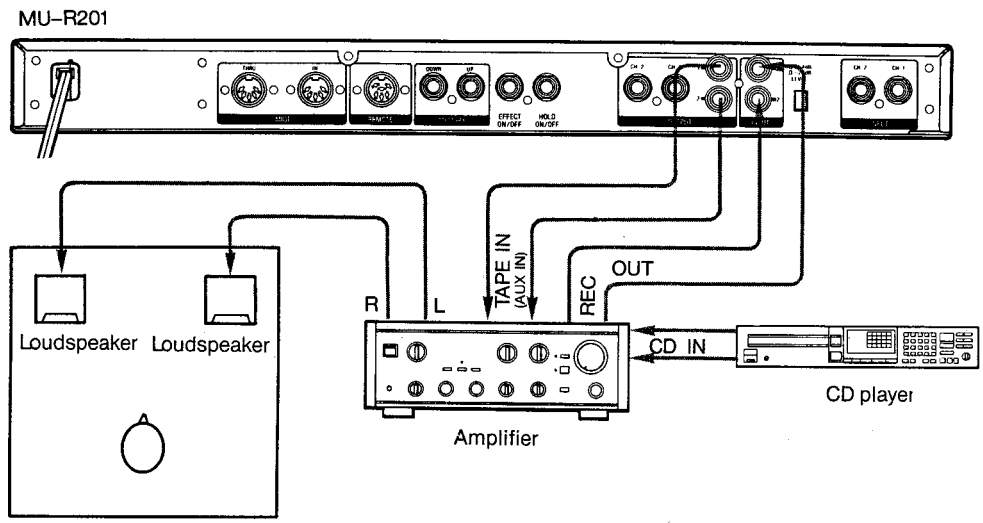


CONNECTIONS WITH AN AUDIO SYSTEM

- The LEVEL switch should normally be set to – 20 dB.
- The STEREO/MONO selector should be set to STEREO.

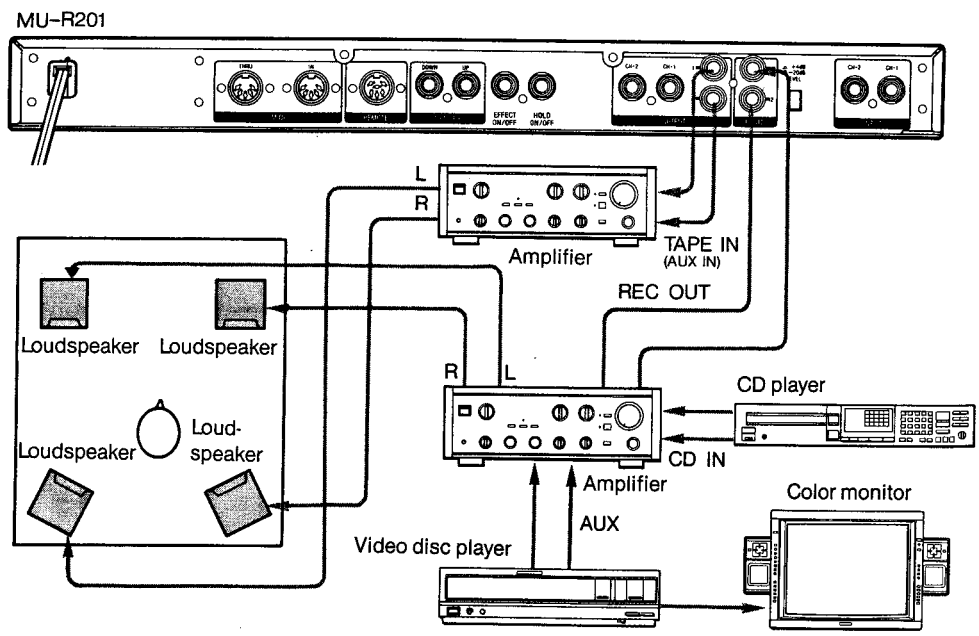
Conventional use

- Set the tape monitor switch of the amplifier to ON.

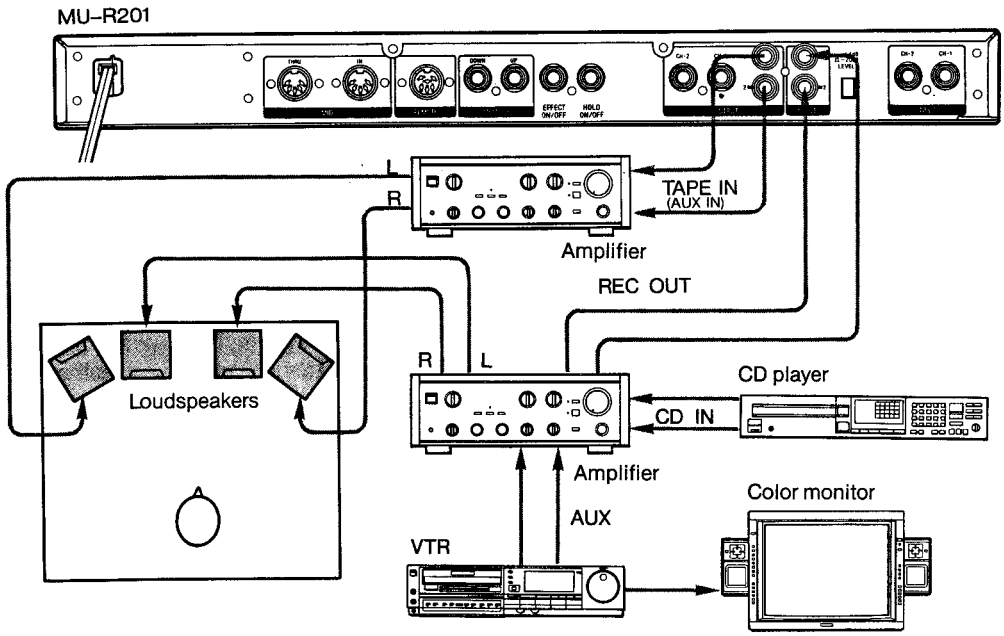


Use for surround sound

- Depending on the listening room, many different patterns are possible. Try for example the preset memory "21." (DRY should be set to 0.)



Use for increased sound presence



To achieve a convincing presence effect

- The reflected sound should arrive at a suitable delay in comparison to the direct sound (about 10 to 30 ms).
- The reflected sound should arrive from a different direction than the direct sound.
- The reflected and the direct sound should have a suitable level difference (about 0 to −6 dB).

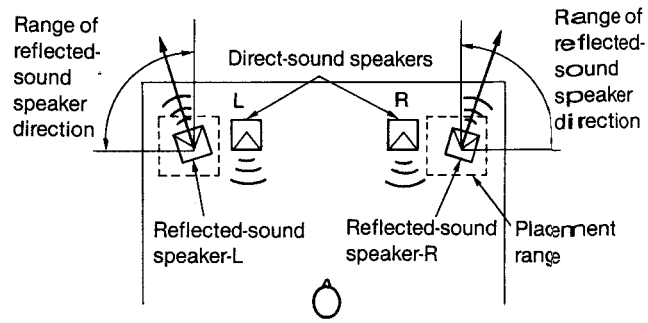
Loudspeaker placement and adjustment of the MU-R201

1. Set the DRY control to 0 (minimum).
2. Place the direct-sound (main) speakers at about 50 cm from the wall, facing forward.
3. Point the reflected-sound speakers towards the walls to the outside of the main speakers.
4. Play back some familiar material at a reasonable volume setting, through the main speakers only.
5. Play back the same material through the reflected-sound speakers only, and adjust the volume control of the amplifier to obtain about equal volume as in step (4).
6. Adjust the position and direction of the reflected-sound speakers so that the sound stage covers the entire wall.
7. Play back the material through both sets of speakers and adjust the E. RFL T to about 10 to 30 ms, paying attention to sound coherence and proper imaging.

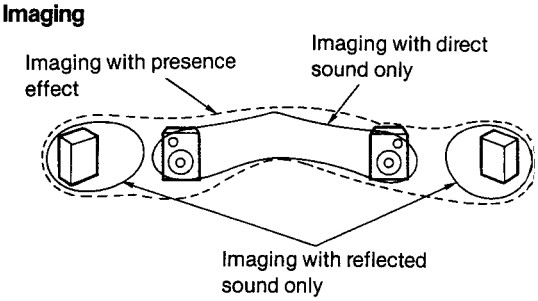
Basic presence effect

Mode No.	REVT (s)	PRE. DT (ms)	E.REFT (ms)	E.RFL LAT	HIGH	FBL	REPEAT	ED (dB)	EFF L
5	1	0	20	0.992	0.99	.000	0	4	1.000
								2	
		0	20	0.992				0	
								0	

Speaker placement principles



Imaging



Choosing reflected-sound speakers

By selecting reflected-sound speakers with sound quality resembling that of the main speakers and with good bass reproduction capability, a natural and pleasing presence can be achieved.

PRESET MEMORY DATA CHART Memory numbers 00.–19.

The following descriptions and recommendations are intended only as a general guideline.
Many other uses of the MU-R201 are possible, limited only by your own imagination and creativity.

Appli-cation	Memory number	Program	Description
Standard patterns	00.	Hall	Simulated characteristics of famous, comparatively large concert halls are stored in this preset. Increase PRE. DT when wishing to increase the sense of depth, and adjust E. RFL. L. to change the size of the stage. The solid fundamentals of the hall can be further enhanced by boosting the LOW setting of the equalizer.
	01.	Room	A newly developed algorithm has made possible the creation of a small, dead space effect not available with conventional systems. To achieve a natural sound with this preset, set REV. T to about 0.3 to 1.0, and add some equalization.
	02.	Plate	The characteristics of plate reverberation, which is most commonly used in recording studios, have been faithfully simulated for this preset. By mixing in a suitable amount of sub reverb, a natural sound suited for many instruments is created. Sources with strong bass content or strings, which cause problems with conventional plate reverberation, are also handled effortlessly.
	03.	Gate Reverb	Gate reverb is most effective with dynamic percussive sounds such as kick drum or snares. By adjusting GATE T. to match the tempo or rhythm, a pleasing effect can be achieved. For this preset, all channels are set to the same value, resulting in averaging gate reverb.
	04.	Reverse Reverb	Reverse reverb, which previously could be produced only by playing a tape backwards, is now easily available with this preset. To create a striking effect, the GATE T parameter is set to a large and the REV. T to a small value. Adjusting PRE. DT and GATE to match the sound peaks is an important point.
	05.	Delay	The same effect as produced by two high-quality delay machines is stored in this preset. A strong effect is achieved by setting channel 1 to 500 ms and channel 2 to 1000 ms delay.
	06.	Flash Panning	This kind of effect previously required the simultaneous use of four delay machines and two autopan units. With the MU-R201, it is available at the simple push of a button. The preset is designed with the image of a comet shooting across the dark sky. It can lend a "space-like" quality to solo instruments.
	07.	Dual Reverb	Two plate reverberation effects with matched characteristics are stored in this preset. As sound quality is neutral and reverb time is long, the effect is suitable for all kinds of instruments. Adjust the DRY and EFFECT controls for optimum mixing.
	08.	Reverb & Gate	This preset permits the use of the MU-R201 as reverb and gate reverb unit. Channel 1 offers deep, uncolorated plate reverb, and channel 2 gate reverb suitable for snares or kick drum.
	09.	Reverb & Delay	Channel 1 contains plate reverb for impressive vocals, and channel 2 a delay effect suitable for slow, melodic instruments like strings or saxophone.
Recording, instrument use	10.	Large Hall	Simulation of a large space which lends suitable ambience to a full orchestra, chorus, etc. Characteristics are that of a well controlled hall.
	11.	Medieval Hall	A medium-size hall with fairly live characteristics, such as produced by stone or glass walls. Suitable for wind instruments.
	12.	Concert Hall	Recreates the characteristics of a medium-size hall for about 1000 people. Suitable for chamber music or a small orchestra.
	13.	Piano Hall	An intimate setting which enhances the bright, appealing sound of solo piano.
	14.	Chamber	A small hall for strings or chamber music.
	15.	Pipe Organ	This preset lends impressive presence and solidity to the pipe organ sound of a synthesizer.
	16.	Brass Solo	Simulates the sound of brass instruments such as trumpets in a medium-size hall.
	17.	Reggae	Special effect suitable for reggae trumpet solos, etc.
	18.	Shadow	By adjusting E. RFL T, the original sound seems to be followed by its shadow.
	19.	Pinball	This special effect may be used for round singing, etc. The reverberation moves from channel 2 to channel 1.

The parameter values for each preset are shown below.

MEMORY No.	PROGRAM	MODE	REV T	PRE DT	E RFL T	E RFL L	RT HIGH	SPREAD	EQ				EFF LEV
00.	Hall	0	3.2	67	47	0.500	0.46	12	4	4	0	2	0.500
				67	47	0.500			4	4	0	2	0.500
01.	Room	1	0.60	19	8	0.750	0.43	3	0	0	0	0	0.625
				19	8	0.750			0	0	0	0	0.625
02.	Plate	2	3.5	34	23	0.500	0.50	11	8	4	2	0	0.500
					23	0.500							
				34	23	0.351			8	4	2	0	0.500
					23	0.351							
			REV T	PRE DT	E RFL T	E RFL L	SPREAD	GATE T	EQ				EFF LEV
03.	Gate Reverb	3	50.0	20	1	0.992	5	130	8	4	8	0	0.875
					1	0.992	5						
				20	1	0.101	8		8	4	8	0	0.875
					1	0.101	8						
04.	Reverse Reverb	4	0.9	119	1	0.000	5	300	0	0	4	6	1.000
					1	0.000	5						
				119	1	0.000	5		0	0	4	6	1.000
					1	0.000	5						
			REV T	PRE DT	E RFL T	E RFL L	RT HIGH	FBL	REPEAT	EQ			EFF LEV
05.	Delay	5	500	0	1	0.000	0.99	0.000	1	0	0	0	0	1.000
			1000	0	1	0.000	0.99	0.000	1	0	0	0	0	1.000
			REV T	PRE DT	RT HIGH	FBL	DEPTH	SPEED	EQ				EFF LEV
06.	Flash Panning	6	150	50	0.99	0.804	1.000	1.84	0	0	0	0	0.750
			200	80	0.99	0.500			0	0	0	0	0.750
			REV T	PRE DT	E RFL T	E RFL L	RT HIGH	SPREAD	EQ				EFF LEV
07.	Dual Reverb	7	3.78	67	23	0.500	0.46	16	0	0	0	0	0.625
					23	0.500							
			3.78	67	43	0.500	0.46		0	0	0	0	0.625
					43	0.500							
			REV T	PRE DT	E RFL T	E RFL L	RT HIGH	SPREAD	EQ				EFF LEV
08.	Reverb & Gate (Cascade : off)	8	2.70	67	23	0.500	0.46	16	6	2	0	−2	1.000
			REV T	PRE DT	E RFL T	E RFL L	SPREAD	GATE T	EQ				EFF LEV
			50.0	20	1	0.992	5	150	8	4	8	0	0.875
			REV T	PRE DT	E RFL T	E RFL L	RT HIGH	SPREAD	EQ				EFF LEV
09.	Reverb & Delay (Cascade : off)	9	2.22	47	13	0.500	0.46	16	−2	0	2	4	1.000
			REV T	PRE DT	E RFL T	E RFL L	RT HIGH	FBL	REPEAT	EQ			EFF LEV
			200	0	1	0.000	0.99	−0.406	1	−2	0	2	4	1.000
			REV T	PRE DT	E RFL T	E RFL L	RT HIGH	SPREAD	EQ				EFF LEV
10.	Large Hall	0	4.0	32	51	0.101	0.46	14	12	6	0	−4	0.500
				32	51	0.101			12	6	0	−4	0.500
11.	Medieval Hall	0	3.4	24	30	0.132	0.46	10	6	0	2	8	0.406
				24	30	0.132			6	0	2	8	0.406
12.	Concert Hall	0	2.2	12	28	0.500	0.62	16	10	−2	8	6	0.500
				12	14	0.500			10	−2	8	6	0.500
13.	Piano Hall	0	1.8	49	34	0.281	0.71	9	0	0	2	4	0.500
				49	27	0.281			0	0	2	4	0.500
14.	Chamber	0	2.7	119	97	0.375	0.59	9	−2	2	0	4	0.437
				153	132	0.375			−2	2	0	4	0.437
15.	Pipe Organ	0	3.0	81	50	0.484	0.60	15	8	4	2	2	0.500
				81	14	0.484			8	4	2	2	0.500
16.	Brass Solo	0	1.5	130	100	0.750	0.60	16	12	−6	10	8	0.625
				140	100	0.750			12	−6	10	8	0.625
17.	Reggae	0	3.0	281	51	0.101	0.60	12	12	4	0	12	0.500
				281	51	0.101			12	4	0	12	0.500
18.	Shadow	0	1.9	50	733	0.289	0.62	9	0	0	0	0	0.468
				50	732	0.273			0	0	0	0	0.468
19.	Pinball	0	2.6	700	100	0.375	0.60	9	4	2	2	4	0.437
				300	200	0.343			4	2	2	4	0.437

Memory numbers 20.–40.

Application	Memory number	Program	Description
Recording, instrument use	20.	Space Echo	Sound effect to simulate the wide, unlimited universe.
	21.	Compact Room	Simulation of a natural sounding, live interior. The effect is hardly noticeable, but it provides an important means to lend body and solidity to the sound, for example, of wood instruments or guitar. This technique is one of the secrets of professional engineers.
	22.	Powerful Drum	Especially suited for digital drums, drum compo servers, etc. Drastically improves the impact and musicality of kick drums.
	23.	Woodwinds	Lends a light and airy sound to woodwinds and wood percussion such as marimba, wood block, claves, etc. Especially suited for the relatively dry sounds produced with a synthesizer.
	24.	Live House (1)	Suitable to simulate reproduction of percussion, drums or synthesizer drums in a live-performance club with good acoustics.
	25.	Live House (2)	A somewhat larger club which is excellent for powerful drums, synthesizer drums, etc.
	26.	Vivid Snare	Useful for snares or kick drum. The slightly metallic sound will stand out and be clearly discernible also in an ensemble.
	27.	Piano Bar	Simulates the atmosphere of a small salon or lobby for solo piano or guitar. Use with a small ensemble is also effective to produce a mellow sound.
	28.	Baroque	Lends a festive mood to recorder, cembalo, string quartet performances, etc.
	29.	Trumpet	Suitable for brass instruments such as trumpet and trombone. The effect can also be used with a reduced level for reed instruments to improve sound depth.
	30.	Beat Sound	Rhythmic, danceable sounds from synthesizer drums or drum machine are enhanced by this metallic effect.
	31.	Snare	An effect commonly used for snare drums. By boosting LOW and L MID of the equalizer and reducing the RT HIGH setting, a deep, clear-cut snare sound can be produced.
	32.	Clear Reverb	This highly intricate reverberation is achieved by a complex combination of pre-delay and early reflections. Using this effect increases depth without blurring the sound image.
	33.	Electric Guitar Distortion	Increases the drive of a lead guitar with distortion. Original sound character can be produced by adding equalization, especially in the MID and HIGH range.
	34.	Flute	Lends depth to instruments such as flute and alto recorder, bamboo flute, etc.
	35.	Lyric Piano	Suitable for slow jazz ballads or medium-tempo popular numbers, using plate reverberation for hall ambience.
	36.	Mystic Strings	Increases the spread of strings, synthesizer, harp, etc., with a mystical effect. Suitable for slow numbers, ballads, etc.
	37.	Cathedral	Music such as Gregorian chants and chorus vocals can be enhanced with this effect.
	38.	Guitar Reverb	Powerful reverberation of a similar impact as twin reverb. Suitable for electric guitar.
	39.	Polyrhythm	By using this effect with percussive sounds produced with a synthesizer or drum machine, a revolving reverberation with a large pre-delay (440 ms) is achieved. Create polyrhythms by matching the PRE DT timing to the tempo of the music.
	40.	Rock Vocal	Suitable for dazzling male or female vocal performances.

MEMORY No.	PROGRAM	MODE	REV T	PRE DT	E RFL T	E RFL L	RT HIGH	SPREAD	EQ				EFF LEV
20.	Space Echo	0	99.0	100	51	0.375	0.40	12	4	4	0	2	0.375
				100	51	0.375			4	4	0	2	0.375
21.	Compact Room	1	0.30	11	7	0.992	0.99	2	12	0	6	4	0.406
				13	4	0.992			12	0	6	4	0.406
22.	Powerful Drum	1	0.37	23	8	0.500	0.33	3	8	6	10	10	0.406
				23	8	0.500			8	6	10	10	0.406
23.	Woodwinds	1	0.57	21	9	0.500	0.73	4	0	0	2	0	0.500
				21	9	0.500			0	0	2	0	0.500
24.	Live House (1)	1	0.75	15	10	0.843	0.50	2	-12	-4	12	-8	0.484
				15	10	0.843			-12	-4	12	-8	0.484
25.	Live House (2)	1	0.77	23	11	0.523	0.49	3	12	4	0	-2	0.468
				23	11	0.523			12	4	0	-2	0.468
26.	Vivid Snare	1	1.07	18	6	0.500	0.70	4	0	0	0	0	0.406
				18	6	0.500			0	0	0	0	0.406
27.	Piano Bar	1	1.02	35	8	0.500	0.89	3	-12	2	8	12	0.437
				51	8	0.500			-12	2	8	12	0.437
28.	Baroque	1	0.80	12	103	0.984	0.45	2	4	-2	-2	4	0.484
				12	103	0.984			4	-2	-2	4	0.484
29.	Trumpet	1	0.67	72	11	0.476	0.46	2	2	-2	4	-2	0.531
				67	8	0.445			2	-2	4	-2	0.531
30.	Beat Sound	1	0.70	1	1	0.000	0.01	11	12	-2	2	2	0.500
				71	1	0.000			12	-2	2	2	0.500
31.	Snare	2	1.7	37	38	0.523	0.47	8	-2	0	2	2	0.875
					39	0.523							
				33	31	0.406			-2	0	2	2	0.875
					31	0.406							
32.	Clear Reverb	2	1.7	34	25	0.500	0.87	11	0	10	2	-10	0.625
					23	0.500							
				34	113	0.335			0	10	2	-10	0.625
					174	0.335							
33.	Electric Guitar Distortion	2	2.4	47	39	0.523	0.60	10	6	2	-4	-4	0.750
					37	0.523							
				51	23	0.351			6	2	-4	-4	0.750
					23	0.351							
34.	Flute	2	0.8	94	44	0.234	0.99	15	8	8	-8	-4	0.750
					45	0.265							
				87	43	0.242			8	8	-8	-4	0.750
					39	0.265							
35.	Lyric Piano	2	3.2	83	11	0.500	0.71	13	8	4	2	0	0.500
					13	0.500							
				83	74	0.476			8	4	2	0	0.500
					74	0.476							
36.	Mystic Strings	2	4.2	40	23	0.500	0.50	12	4	4	8	8	0.500
					23	0.500							
				40	23	0.500			4	4	8	8	0.500
					23	0.500							
37.	Cathedral	2	6.3	23	23	0.500	0.85	15	4	2	0	0	0.500
					23	0.500							
				23	103	0.507			4	2	0	0	0.500
					103	0.507							
38.	Guitar Reverb	2	1.6	21	50	0.500	0.50	1	0	0	8	8	0.875
					50	0.500							
				21	23	0.250			0	0	8	8	0.875
					23	0.250							
39.	Poly Rhythm	2	2.5	440	50	0.500	0.50	1	0	0	8	8	0.500
					50	0.500							
				440	23	0.250			0	0	8	8	0.500
					23	0.250							
40.	Rock Vocal	2	1.8	273	71	0.992	0.37	16	-4	4	12	6	0.875
					71	0.992							
				273	273	0.312			-4	4	12	6	0.875
					273	0.414							

Memory numbers 41.–60.

Application	Memory number	Program	Description
Recording, instrument use	41.	Vibrato	By using this effect for solo string or reed instruments with vibrato, reverberation with clear sound imaging is achieved. For best results, the effect should be used with moderation.
	42.	Sharp Snare	Sharp gate reverb for snares or tom tom.
	43.	Tom Beat	This effect is suitable for repeated percussion sounds. GATE T must be carefully adjusted, for good phrase and gate matching.
	44.	Kick Gate	Normal gate for use with kick drums. GATE T must be adjusted to match the tempo.
	45.	Fancy Kick	A new kind of gate reverb for kick drums. Interesting effects can be accomplished for example with 16-beat rhythm patterns.
	46.	Slip Gate	Gate reverb with the sound moving from right to left. Using it for short drum solos produces striking effects.
	47.	Heavy Reverse	Short reverse reverb suitable for all kinds of drums. May be inserted for example in the middle of a selection.
	48.	Reverse Slip	Special reverse reverb moving from left to right.
	49.	Scratch Reverse	Reverse reverb with final attack. Suitable for tom tom and congas, etc.
	50.	Single Tapped Delay	Use for synthesizer or percussion. Channel 1 has a delay of 173 ms+440 ms=613 ms, and channel 2 a delay of 440 ms with a slight high-cut filter.
	51.	Twin Delay	Permits use of the MU-R201 as two regular delay machines. Attenuation is adjusted with FBL and RT HIGH. By setting FBL to 0.500 and RT HIGH to 0.99, the sound is attenuated by half each period.
	52.	Tapped Delay	With this feedback delay, the level increases until the number of selected repeats is reached, and then decays. In channel 2 only, pre-delay is used, which causes the sound to oscillate between left and right.
	53.	Flying Delay	The sound seem to drift back and forth in the air and then decays slowly. Suitable for ballads, etc.
	54.	Panning Delay	This preset simulates the panning of a distinct sound source, with different rhythm effects in the two channels. Creates special effects with synthesizer or percussion.
	55.	Shadow Rhythm	Using this preset at tempo 120 or 60 with high-hat or snares creates interesting polyrhythms. When changing the tempo, PRE. DT must be adjusted. For tempo 150 and 4-beat material, the beat occurs once every 400 ms (60 ÷ 150), and for 8-beat once every 200 ms. Therefore PRE. DT should be set to 200 (ms). The effect should be fed to one channel only.
	56.	Rose Piano	Suitable for electric piano with vibrato. The same signal should not be fed to both channels.
	57.	Auto Panning	The sound is automatically panned between the two channels. By increasing the speed, a tremolo effect with the sound virtually vibrating in the air can be achieved. One panning cycle is set to 5 seconds. Turn down the DRY control to check the effect. The same signal should not be fed to both channels.
	58.	Tremolo	Adjust the SPEED to produce vibrato for continuous sounds such as organ or strings. The same signal should not be fed to both channels.
	59.	Twin Plate	Two plate reverbs with perfectly matched characteristics. A powerful sound impression is created by slightly boosting L MID with the equalizer.
	60.	Tom Tom	Effective dual reverb. Using channel 1 for high tom tom and channel 2 for low tom tom can serve to produce distinctive results.

MEMORY No.	PROGRAM	MODE	REV T	PRE DT	E RFL T	E RFL L	RT HIGH	SPREAD	EQ				EFF LEV
41.	Vibrato	2	2.6	571	133	0.992	0.87	11	0	10	2	−4	0.500
					127	0.992							
				424	197	0.992			0	10	2	−4	0.500
					197	0.992							
			REV T	PRE DT	E RFL T	E RFL L	SPREAD	GATE T	EQ				EFF LEV
42.	Sharp Snare	3	10.0	20	20	0.992	3	120	4	2	8	−2	0.750
					20	0.992	3						
				20	54	0.992	6		4	2	8	−2	0.750
					54	0.992	6						
43.	Tom Beat	3	2.6	10	10	0.500	6	100	0	0	0	0	1.000
					10	0.500	6						
				10	10	0.500	8		0	0	0	0	1.000
					10	0.500	8						
44.	Kick Gate	3	2.0	1	1	0.992	6	163	12	4	0	−10	0.875
					1	0.992	6						
				1	1	0.000	8		12	4	0	−10	0.875
					1	0.000	8						
45.	Fancy Kick	3	50.0	90	174	0.343	6	1	0	0	0	0	1.000
					174	0.343	6						
				90	1	0.000	9		0	0	0	0	1.000
					1	0.000	9						
46.	Slip Gate	3	50.0	120	1	0.992	6	220	8	4	8	0	0.625
					1	0.992	6						
				20	50	0.085	8		8	4	8	0	0.625
					50	0.085	8						
47.	Heavy Reverse	4	1.1	60	4	0.500	6	111	0	−2	−2	8	1.000
					4	0.500	6						
				60	4	0.500	16		0	−2	−2	8	1.000
					4	0.500	16						
48.	Reverse Slip	4	4.0	120	1	0.000	6	175	0	−2	−2	8	0.875
					1	0.000	6						
				240	1	0.000	8		0	−2	−2	8	0.875
					1	0.000	8						
49.	Scratch Reverse	4	91.0	1	201	0.992	3	170	4	0	4	4	0.875
					201	0.992	3						
				1	1	0.000	6		4	0	4	4	0.875
					1	0.000	6						
			REV T	PRE DT	E RFL T	E RFL L	RT HIGH	FBL	REPEAT	EQ				EFF LEV
50.	Single Tapped Delay	5	440	173	1	0.000	0.56	0.000	1	6	−4	12	−2	1.000
			440	0	1	0.000	0.56	0.000	1	6	−4	12	−2	1.000
51.	Twin Delay	5	350	0	1	0.000	0.50	0.304	1	6	−4	12	−2	0.875
			350	0	1	0.000	0.50	0.304	1	6	−4	12	−2	0.875
52.	Tapped Delay	5	410	0	255	0.750	0.90	0.500	2	0	0	0	0	0.875
			410	255	255	0.750	0.90	0.500	2	0	0	0	0	0.875
53.	Flying Delay	5	250	173	1	0.000	0.50	0.539	4	6	−4	12	−2	1.000
			250	0	1	0.000	0.50	0.359	3	6	−4	12	−2	1.000
54.	Panning Delay	5	381	127	1	0.000	0.99	0.000	2	0	0	0	0	1.000
			381	254	254	0.992	0.99	0.000	2	0	0	0	0	1.000
			REV T	PRE DT	RT HIGH	FBL	DEPTH	SPEED	EQ				EFF LEV
55.	Shadow Rhythm	6	1	250	0.99	0.000	1.000	20.00	0	2	6	2	0.750
			1	250	0.99	0.000			0	2	6	2	0.750
56.	Rose Piano	6	1	201	0.99	0.000	0.679	2.00	0	2	6	2	0.750
			1	201	0.99	0.000			0	2	6	2	0.750
57.	Auto Panning	6	0	0	0.99	0.000	1.000	0.20	0	2	6	2	1.000
			0	0	0.99	0.000			0	2	6	2	1.000
58.	Tremolo	6	0	0	0.99	0.000	1.000	7.50	4	2	2	0	1.000
			0	0	0.99	0.000			4	2	2	0	1.000
			REV T	PRE DT	E RFL T	E RFL L	RT HIGH	SPREAD	EQ				EFF LEV
59.	Twin Plate	7	2.10	10	10	0.500	0.48	16	4	2	0	0	0.500
					10	0.500							
			2.10	10	45	0.500	0.48		4	2	0	0	0.500
					45	0.500							
60.	Tom Tom	7	4.02	51	20	0.500	0.08	9	8	0	6	0	0.750
					20	0.500							
			2.46	51	43	0.500	0.27		8	0	6	0	0.750
					43	0.500							

Memory numbers 61.–79.

Application	Memory number	Program	Description
Recording, instrument use	61.	Ethnic Drum	Lends raw impact and low-end solidity to tom toms, etc. Low frequencies have a long reverberation time in channel 1, and high frequencies in channel 2.
	62.	Cliffverb	Advanced technique which adds a slight reverb just before the gate cut-off action. Input to channel 1 and use the output of channel 2.
	63.	Solo Guitar & Metal Gate	Channel 1 provides reverb for solo guitar with clear initial attack, and channel 2 offers rough gate reverb for highly metallic percussion sounds.
	64.	Special Beat	Strong effect to emphasize a special percussion part within a selection. Input to channel 1 and use the output of channel 2.
PA (SR) use	65.	Standard Vocal	**Use of reverb on location for PA (SR) purposes** In recent years, reverberation is widely used in PA equipment for concerts and other events. About three or four reverberators are often employed in a typical installation. Especially for open-air concerts, reverberators are a vital part of the equipment. However, problems often occur due to acoustic feedback, as the sound chain extends from microphone to speakers to hall echo and back to the microphone. Long reverberation times in particular can easily cause feedback. Reverberation should therefore be used with judgment, for example to enhance the impact and spaciousness of vocals while avoiding excessive effects. The MU-R201 provides ten PA presets which were determined through actual use in the field. However, as each stage and location is different, further adjustment may be required to achieve optimum results. 65.: Standard setting with hall mode for most vocals. 66.: Suitable for upbeat rock vocals. 67., 68.: Lends depth to slow-moving ballads. 69.: Increases the sound depth with male vocals in small locations. 70.: Suitable for vocals in large outdoor settings. 71.: Use sparingly to enhance spaciousness of female vocals. 72.: Adds sparkle to female vocals. 73.: Suitable for female vocal ballads. 74.: Adds a cosmic sound to synthesizer solos.
	66.	Rock Vocal	
	67.	Ballad (1)	
	68.	Ballad (2)	
	69.	Male Vocal (1)	
	70.	Male Vocal (2)	
	71.	Female Vocal (1)	
	72.	Female Vocal (2)	
	73.	Female Vocal Ballad	
	74.	Solo synthesizer	
Special effects	75.	Tunnel	Simulates a tunnel. This effect can be used for example in this way: Set DRY to minimum and EFFECT to maximum. Then slowly increase the DRY level and decrease the EFFECT level. The sound now seems to be moving out of the tunnel and approaching the listener. Reverse operation is also possible.
	76.	Stadium	Simulation of announcements at a large stadium. By setting PRE. DT to a low value and slightly increasing RT HIGH, the atmosphere of a school yard can be created.
	77.	Gymnasium	Simulates the fairly live sound of a sports gymnasium or auditorium with wooden floors and walls. To emulate this location filled with people, decrease RT HIGH. The balance of DRY and EFFECT controls the distance to the sound source. Increasing DRY brings it closer to the listener.
	78.	Indoor Pool	Simulates an indoor location with a large water surface. By controlling SPREAD and PRE. DT, the effect can be brought to resemble a bathroom, for example to simulate singing in a bathtub. By decreasing DRY and increasing EFFECT with the pool setting, the listener seems to be seated in the spectator area.
	79.	Radio Play	Radio shows mostly recorded close-miked, which can cause them to sound unnatural. This effect improves reality by restoring the impression of regular indoor speaking.

MEMORY No.	PROGRAM	MODE	REV T	PRE DT	E RFL T	E RFL L	RT HIGH	SPREAD	EQ				EFF LEV
61.	Ethnic Drum	7	4.50	50	10	0.500	0.08	3	0	0	0	0	0.750
					10	0.500							
			2.10	50	43	0.500	0.27		0	0	0	0	0.750
					43	0.500							
			REV T	PRE DT	E RFL T	E RFL L	RT HIGH	SPREAD	EQ				EFF LEV
62.	Cliffverb (Cascade : 1-2)	8	3.54	83	10	0.500	0.43	16	4	6	0	0	0.750
			REV T	PRE DT	E RFL T	E RFL L	SPREAD	GATE T	EQ				EFF LEV
			10.0	30	23	0.500	6	17	4	6	0	0	0.500
			REV T	PRE DT	E RFL T	E RFL L	RT HIGH	SPREAD	EQ				EFF LEV
63.	Solo Guitar & Metal Gate (Cascade : Off)	8	1.62	100	100	0.500	0.37	13	−2	0	2	4	1.000
			REV T	PRE DT	E RFL T	E RFL L	SPREAD	GATE T	EQ				EFF LEV
			50.0	25	20	0.992	1	80	12	12	6	0	1.000
			REV T	PRE DT	E RFL T	E RFL L	RT HIGH	SPREAD	EQ				EFF LEV
64.	Special Beat (Cascade: 1−2)	9	2.82	110	40	0.500	0.55	14	−2	0	2	4	0.875
			REV T	PRE DT	E RFL T	E RFL L	RT HIGH	FBL / REPEAT	EQ				EFF LEV
			300	0	1	0	0.50	0.500 / 1	−2	0	2	4	0.875
			REV T	PRE DT	E RFL T	E RFL L	RT HIGH	SPREAD	EQ				EFF LEV
65.	Standard Vocal	0	2.8	80	86	0.500	0.68	12	−2	0	2	6	0.500
				105	86	0.500			−2	0	2	6	0.500
66.	Rock Vocal	2	3.0	75	63	0.804	0.28	10	−2	2	0	4	0.500
					63	0.804							
				95	255	0.375			−2	2	0	4	0.500
					255	0.375							
67.	Ballad (1)	0	3.0	78	120	0.640	0.75	12	−2	0	2	6	0.500
				150	120	0.640			−2	0	2	6	0.500
68.	Ballad (2)	2	3.6	106	47	0.500	0.60	15	0	0	2	6	0.500
					29	0.500							
				106	245	0.296			0	0	2	6	0.500
					256	0.296							
69.	Male Vocal (1)	0	4.0	62	30	0.132	0.46	9	0	0	2	2	0.500
				62	30	0.132			0	0	2	2	0.500
70.	Male Vocal (2)	2	2.8	85	45	0.585	0.75	12	−4	−2	2	6	0.500
					45	0.585							
				85	45	0.585			−4	−2	2	6	0.500
					45	0.585							
71.	Female Vocal (1)	0	5.2	87	51	0.101	0.28	15	−2	2	2	4	0.406
				87	51	0.101			−2	2	2	4	0.406
72.	Female Vocal (2)	0	3.3	1	51	0.101	0.52	12	−2	2	2	8	0.445
				1	51	0.101			−2	2	2	8	0.445
73.	Female Ballad	2	3.5	12	120	0.218	0.68	16	8	6	2	0	0.500
					120	0.218							
				12	208	0.226			8	6	2	0	0.500
					208	0.226							
74.	Solo Synthesizer	0	3.4	24	30	0.132	0.46	9	6	0	2	8	0.539
				24	30	0.132			6	0	2	8	0.539
75.	Tunnel	2	2.5	178	50	0.500	0.45	11	8	4	2	0	0.500
					50	0.500							
				343	23	0.351			8	4	2	0	0.500
					23	0.351							
76.	Stadium	2	1.7	247	72	0.945	0.65	11	8	2	0	−8	0.375
					72	0.945							
				247	733	0.156			8	2	0	−8	0.375
					370	0.453							
77.	Gymnasium	2	2.0	342	133	0.992	0.87	11	0	10	2	−4	0.500
					127	0.992							
				424	197	0.992			0	10	2	−4	0.500
					197	0.992							
78.	Indoor Pool	2	3.5	87	27	0.500	0.97	11	0	10	2	−10	0.500
					27	0.500							
				87	63	0.250			0	10	2	−10	0.500
					63	0.250							
79.	Radio Play	1	0.57	21	9	0.500	0.73	2	6	2	2	0	0.500
				21	9	0.500			6	2	2	0	0.500

Memory numbers 80.–99.

Application	Memory number	Program	Description
Special effects	80.	Mecha-Voice	Creates the image of robot or synthesized voices. Decreasing REV. T (delay time) increases the pitch and vice versa.
	81.	Cave	Simulates the sound of a comparatively small cave. The consistence of walls (rock, earth) and size of the cave can be adjusted with REV. T, E. RFL. T and RT HIGH.
	82.	Mountain Echo	Creates an echo as heard deep in the mountains. The shape and appearance of mountains and valleys can be influenced with REV. T. Increase the value for rocky surroundings and decrease it for an impression of wooded areas. The feel of the echo itself should be adjusted with the number of repeats and the feedback level.
	83.	Karaoke (1)	This echo is designed for normal sing-along (karaoke) vocals in slow tempo. Higher tempos can be matched by decreasing REV. T and FBL. Female vocals can often be enhanced by boosting the LOW setting of the equalizer.
	84.	Karaoke (2)	Plate reverb for sing-along use. Suitable for popular numbers. Adjusting EQ as in 83. can further improve results.
Audio use	85.	American Large Hall (1)	Five different patterns gained by analyzing renowned concert halls all over the world are stored in these presets, for BGM or audio use. When applied to BGM, these effects create a soothing, unobtrusive sound which is suitable also for conferences, etc. If the volume is lowered, increasing EFFECT restores a natural balance. For audio applications, tapes, records or CDs can be enhanced with a rich feeling of presence. As some records and CDs are already pre-processed, the MU-R201 should be used in moderation. 85.: Sparkling, bright ambience such as found in the Boston Symphony Hall. 86.: Ambience with long reverberation times for low frequencies, such as in Carnegie Hall. 87.: Well-balanced, high-quality ambience as in the Musikverein-Saal of Vienna. 88.: Hall with a delicate high end and rich mid and low frequency reverberation. 89.: Concert hall suited for solo instrument recitals.
	86.	American Large Hall (2)	
	87.	European Large Hall (1)	
	88.	European Large Hall (2)	
	89.	European Recital Hall	
	90.	Orchestra (1)	Suitable for reproduction of orchestra recordings of symphonies, etc. Preset 90. simulates a front row seat on the ground floor and preset 91. a front row seat in the balcony.
	91.	Orchestra (2)	
	92.	Chamber Music (1)	These presets are designed for small and medium size chamber music ensembles. Preset 92. simulates a front row seat in a medium hall and preset 93. a first row seat in a small hall.
	93.	Chamber Music (2)	
	94.	Opera (1)	These presets simulate a large opera house. Preset 94. simulates a front row seat in the balcony of a medium size hall and preset 95. a front row seat on the ground floor.
	95.	Opera (2)	
	96.	Jazz (1)	These presets simulate a live jazz or fusion music performance. Preset 96. emulates an outdoor concert and preset 97. an indoor concert with PA equipment.
	97.	Jazz (2)	
	98.	Rock (1)	These presets are designed for rock recordings. To recreate the feeling of a live performance, the time factors of the reflected sound and the tone balance were modified.
	99.	Rock (2)	

Note
The presets of memory numbers 90. through 99. are designed for output to sub speakers (reflected-sound speakers) used to create a presence effect. (For details, refer to page 35.)

MEMORY No.	PROGRAM	MODE	REV T	PRE DT	E RFL T	E RFL L	RT HIGH	FBL	REPEAT	EQ				EFF LEV
80.	Mecha-Voice	5	7	19	1	0.000	0.99	0.507	5	2	2	8	−2	0.500
			7	19	1	0.000	0.99	0.804	5	2	2	8	−2	0.500
81.	Cave	7	REV T	PRE DT	E RFL T	E RFL L	RT HIGH	SPREAD		EQ				EFF LEV
			1.38	53	63	0.820	0.12	10		10	4	−4	−8	0.750
					63	0.820								
			1.38	127	7	0.796	0.12			10	4	−4	−8	0.750
					7	0.796								
82.	Mountain Echo (Cascade: 1 – 2)	9	REV T	PRE DT	E RFL T	E RFL L	RT HIGH	SPREAD		EQ				EFF LEV
			1.38	62	1	0.476	0.50	14		6	2	0	0	0.750
			REV T	PRE DT	E RFL T	E RFL L	RT HIGH	FBL	REPEAT	EQ				EFF LEV
			1001	0	1	0.992	0.43	0.195	1	6	2	0	0	0.750
83.	Karaoke (1)	5	REV T	PRE DT	E RFL T	E RFL L	RT HIGH	FBL	REPEAT	EQ				EFF LEV
			130	0	1	0.000	0.70	0.578	1	2	6	12	4	0.500
			130	0	1	0.000	0.70	0.576	1	2	6	12	4	0.500
84.	Karaoke (2)	2	REV T	PRE DT	E RFL T	E RFL L	RT HIGH	SPREAD		EQ				EFF LEV
			2.5	34	23	0.500	0.83	11		0	10	2	−10	0.500
					23	0.500								
				34	113	0.250				0	10	2	−10	0.500
					174	0.250								
85.	American Large Hall (1)	0	2.0	26	13	0.656	0.66	16		2	0	0	0	0.484
				23	13	0.656				2	0	0	0	0.468
86.	American Large Hall (2)	0	2.8	29	21	0.781	0.27	16		6	0	0	−2	0.500
				32	21	0.781				6	0	0	−2	0.500
87.	European Large Hall (1)	0	2.4	15	17	0.476	0.48	13		4	2	0	0	0.500
				12	17	0.476				4	2	0	0	0.500
88.	European Large Hall (2)	0	2.1	17	18	0.632	0.44	13		8	2	0	−4	0.500
				17	18	0.632				8	2	0	−4	0.500
89.	European Recital Hall	0	1.5	37	17	0.750	0.33	11		2	2	2	−2	0.500
				37	17	0.750				2	2	2	−2	0.500
90.	Orchestra (1)	5	REV T	PRE DT	E RFL T	E RFL L	RT HIGH	FBL	REPEAT	EQ				EFF LEV
			1	0	25	0.882	0.99	0.000	0	4	4	4	0	1.000
			1	0	25	0.882	0.99	0.000	0	4	4	4	0	1.000
91.	Orchestra (2)	0	REV T	PRE DT	E RFL T	E RFL L	RT HIGH	SPREAD		EQ				EFF LEV
			1.2	20	15	0.992	0.46	12		4	4	2	0	0.546
				20	15	0.992				4	4	2	0	0.546
92.	Chamber Music (1)	0	1.2	20	15	0.992	0.76	14		6	4	2	0	0.578
				20	15	0.992				6	4	2	0	0.578
93.	Chamber Music (2)	0	0.3	20	15	0.992	0.76	8		6	4	6	0	0.804
				20	15	0.992				6	4	6	0	0.804
94.	Opera (1)	1	0.60	25	13	0.992	0.50	13		4	0	0	0	0.750
				25	13	0.992				4	0	0	0	0.750
95.	Opera (2)	1	0.60	25	13	0.992	0.50	3		4	2	0	0	0.750
				25	13	0.992				4	2	0	0	0.750
96.	Jazz (1)	1	0.35	25	13	0.992	0.50	2		4	4	2	2	0.843
				25	13	0.992				4	4	2	2	0.843
97.	Jazz (2)	1	0.40	23	16	0.992	0.80	6		6	6	4	0	0.843
				23	16	0.992				6	6	4	0	0.843
98.	Rock (1)	5	REV T	PRE DT	E RFL T	E RFL L	RT HIGH	FBL	REPEAT	EQ				EFF LEV
			1	0	16	0.781	0.99	0.000	0	10	6	0	0	1.000
			1	0	16	0.781	0.99	0.000	0	10	6	0	0	1.000
99.	Rock (2)	2	REV T	PRE DT	E RFL T	E RFL L	RT HIGH	SPREAD		EQ				EFF LEV
			0.8	26	14	0.906	0.50	4		4	2	4	2	0.570
					14	0.906								
				26	20	0.992				4	2	4	2	0.570
					20	0.992								

USER MEMORY DATA CHART

Memory number	Mode	Program	Parameters										
			REV. T	PRE. DT	E. RFL. T	E. RFL. L	RT HIGH	SPREAD	GATE T	FBL	REPEAT	DEPTH	SPEED

LOW	L MID	H MID	HIGH	EFF. L	CASCADE	Comments

MIDI IMPLEMENTATION CHART

When using the MIDI function for data transfer between other equipment and the MU-R201, the data format must conform to the conditions shown below and in the implementation chart on the next page.
(The MU-R201 can send data only from the REMOTE terminal.)

MIDI data format

Channel voice message

- 1100 nnnn — Program change & channel number (nnnn=0—15)
  0ppp pppp — Program number (ppppppp=0—127)
- 1011 nnnn — Control change & channel number (nnnn=0—15)
  0ccc cccc — Control number (ccccccc=0—121)
  0vvv vvvv — Control value (vvvvvvv=0—127)
- 1001 nnnn — Note On & channel number (nnnn=0—15)
  0kkk kkkk — Note number (kkkkkkk=0—127)
  0vvv vvvv — Note On velocity (vvvvvvv=0—127)
- 1101 nnnn — Channel pressure (After-touch) & channel number (nnnn=0—15)
  0vvv vvvv — Pressure value (vvvvvvv=0—127)

Channel mode message

- 1011 nnnn — Mode messages & channel number (nnnn=0—15)
  0ccc cccc — Omni mode Off: (ccccccc=124, vvvvvvv=0) / Omni mode On: (ccccccc=125, vvvvvvv=0)
  0vvv vvvv

System real time message

- 1111 1111 — System reset

System exclusive message

- 1111 0000 (F0) — Status
  0100 1100 (4c) — ID•No
  0ccc cccc — Command
  0ddd dddd
  ⋮ — Data
  0ddd dddd
  1111 0111 (F7) — EOX

	Command	Data
Key code transfer (receive)	0000 0000	0nkk kkkk key data (kkkkkk = 0—63, n = 0 key Off data, n = 1 key On data)
Start address transfer (receive)	0010 0000	0000 aaaa 0000 aaaa 0000 aaaa 0000 aaaa 3210 7654 BA98 FEDC aaaa aaaa aaaa aaaa Start address FEDC BA98 7654 3210
Data transfer (send/receive)	0100 0000	0000 aaaa 0000 aaaa 0000 aaaa 0000 aaaa 0000 dddd 0000 dddd ··· 3210 7654 BA98 FEDC 3210 7654 aaaa aaaa aaaa aaaa Start of transfer address FEDC BA98 7654 3210 dddd dddd Transfer data 7654 3210
Display transfer (send)	0111 0000	0000 dddd 0000 dddd ····· 3210 7654 dddd dddd Display data 7654 3210
Request all display data (receive)	0111 0001	
System check (send)	0111 1111	0000 dddd 0000 dddd 3210 7654 dddd dddd System check data 7654 3210

MIDI Implementation Chart

[2CH DIGITAL REVERBERATOR] Date : 11/21,1986
Model MU-R201 MIDI Implementation Chart Version : 1.0

Function ...	Transmitted	Recognized	Remarks
Basic Default	X	1-16	Memorized
Channel Changed	X	1-16	
Default	X	OMNI ON/OFF	Memorized
Mode Messages	X	X	
Altered	**********		
Note	X	O	
Number : True voice	**********	X	
Velocity Note ON	X	O	
Note OFF	X	X	
After Key's	X	X	
Touch Ch's	X	O	
Pitch Bender	X	X	
0-121	X	O	
Control Change			
Prog Change : True #	X **********	O 0-127	
System Exclusive	O	O	
System : Song Pos	X	X	
: Song Sel	X	X	
Common : Tune	X	X	
System :Clock	X	X	
Real Time :Commands	X	X	
Aux :Local ON/OFF	X	X	
:All Notes OFF	X	X	
Mes- :Active Sense	X	X	
sages:Reset	X	O	OMNI ON
Notes			

Mode 1 : OMNI ON, POLY Mode 2 : OMNI ON, MONO O : Yes
Mode 3 : OMNI OFF, POLY Mode 4 : OMNI OFF, MONO x : No

PRECAUTIONS

On safety

- Check that the operating voltage of your unit matches the voltage of your local power supply.
- Should any solid object or liquid fall into the cabinet, unplug the unit and have it checked by qualified personnel before operating it any further.
- Unplug the unit from the wall outlet if it is not to be used for an extended period of time. To disconnect the power cord, pull it out by grasping the plug. Never pull the cable itself.

On installation

- Do not install the unit near heat sources such as radiators or air ducts, or in locations subject to direct sunlight, excessive dust, mechanical vibrations or shock.
- Good air circulation is essential to prevent internal heat build-up. Place the unit in a location with adequate air circulation. Do not place the unit on a soft surface, such as a rug, that would block the ventilation openings on the bottom.

On cleaning

Clean the cabinet, panel and controls with a soft cloth lightly moistened with mild detergent solution. Do not use any abrasive pads, scouring powder or solvents such as alcohol or benzione.

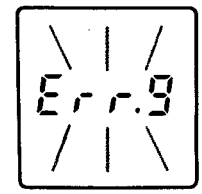
On repacking

Do not throw away the shipping carton and packing material, as these make an ideal container for renewed transport of the unit. If you have any questions or problems concerning your unit, please contact your nearest Sony dealer.

For customers in the USA

For detailed safety precautions, see the leaflet "IMPORTANT SAFEGUARDS".

Memory backup battery replacement



If "Err. 9" is shown on the display after the unit is switched on, the internal battery for memory backup is exhaused. In this condition, the data stored in the user memory are lost and new data cannot be stored. Contact your dealer or an authorized Sony service facility regarding battery replacement.
In normal use, the backup battery should last over 8 years, but to be on the safe side, we recommend replacing the battery after a period of about 5 years. As user memory data are lost during the replacement, important parameter values should first be written down, for example in the User Memory Data Chart on page 46.

If you have any question or problem concerning your unit that is not covered in this manual, please consult your nearest Sony dealer.

Error indication

This unit incorporates a self-check function which is activated after the power is switched on. If a problem is detected, the corresponding error number is shown on the display. If this happens, switch the unit off, disconnect the power cord and contact your dealer or an authorized Sony service facility, informing them which error number was shown.

Error 1

····· ROM error

Error 2

····· RAM error within CPU

Error 3

····· RAM error outside of CPU

Error 9

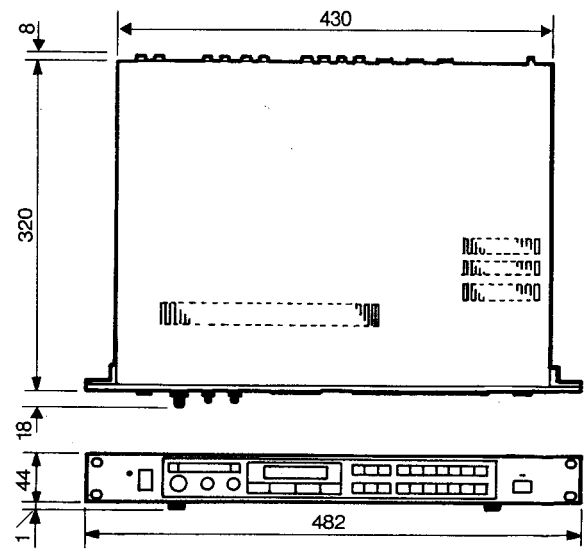
····· Backup error

SPECIFICATIONS

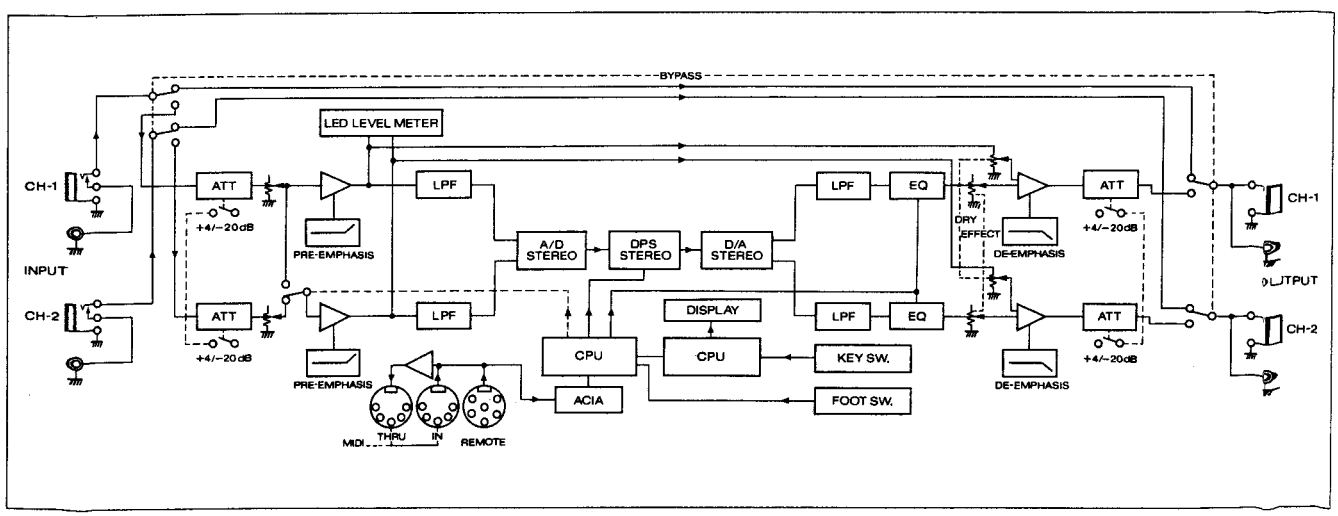
Quantization 16-bit linear
Sampling frequency
26 kHz
Inputs
Input type Standard phone jacks (2 channels)
RCA-type phono jacks (2 channels)
Standard input level
– 20 dBs/+4 dBs
Input impedance
more than 10 kilohms
Outputs
Output type Standard phone jacks (2 channels)
RCA-type phono jacks (2 channels)
Standard output level
– 20 dBs/+4 dBs
Output impedance
less than 600 ohms
Frequency response
DIRECT 20 Hz – 20 kHz ±1.0 dB
EFFECT 20 Hz – 11 kHz ±1.5 dB (EQ flat)
Dynamic range better than 90 dB (EQ flat)

THD below 0.008%, 1 kHz, maximum delay output
Memory capacity
Preset memory 100
User memory 100
Power requirements
USA: 120 V AC, 60Hz
Europe: 220 V or 240V AC, 50/60 Hz
Power consumption
28 W
Dimensions approx. 482 × 44 × 320 mm (w/h/d)
(19 × 1 3/4 × 12 5/8 inches)
excluding projecting parts and controls
Weight approx. 4.5 kg net. (9 lb 15 oz)

Design and specifications subject to change without notice.



BLOCK DIAGRAM



TROUBLESHOOTING

Check the following points before requesting service.

Symptom	Check
No power.	• Power cord not properly plugged into outlet.
No sound.	• INPUT control set to "0". • DRY and EFFECT controls set to "0".
No effects.	• EFFECT control set to "0". • BYPASS switch is depressed.
Low output volume	• Connected to audio amplifier, but LEVEL switch is set to +4 dB.
Sound is distorted.	• Connected to a professional equipment, but LEVEL switch is set to – 20 dB.
No stereo effect.	• Input is a monaural signal.
Parameter buttons do not work.	• EDIT indicator flashes. • EQ button indicator flashes. • FLAT button indicator flashes.
MIDI control not possible.	• MIDI reception channel of MU-R201 and transmission channel of other equipment are not matched. • Control numbers do not match.

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